



BENCHMARKS

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University of North Texas

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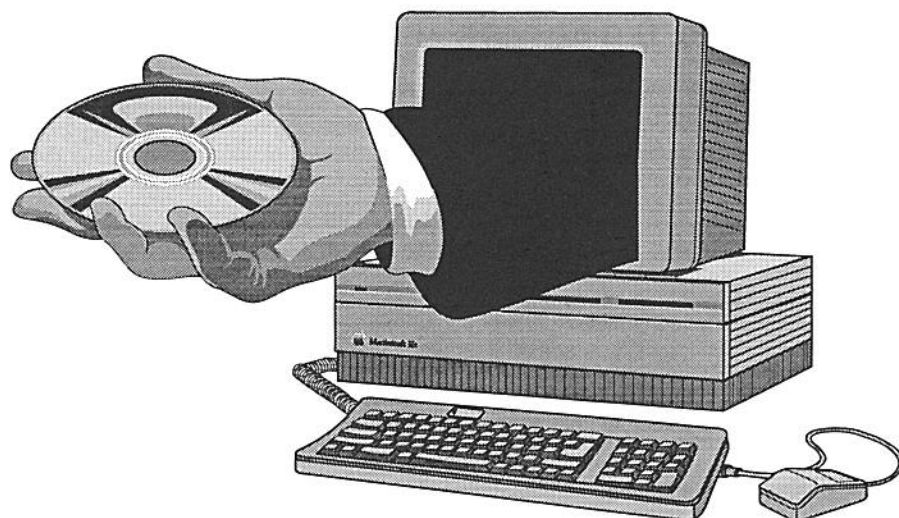
Instructional Technology

By Claudia Lynch, *Benchmarks* Editor (lynch@unt.edu)

When we first wrote about instructional technology in the March/April (Vol. 13, No. 3) and May 1992 (Vol. 13, No. 4) issues of *Benchmarks*, CD-ROMs were just beginning to be sold with PCs, people thought a Gopher was a rodent with cheek pouches and buck teeth, the Apple Macintosh was all of eight years old, the term "information superhighway" was still just words in the "High Performance Computing Act of 1990," and WWW would probably have been interpreted as a mistyped reference to a world war. As they might say at R.J. Reynolds, "we've come a long way, baby."

All one has to do is take a cursory look at the "Colleges, Schools, and Departments" section of the UNT WWW (<http://www.unt.edu/UNT/departments/depts-etc.html>) to see how far. Who would have dreamed in 1992 that in just two years, *anyone* would be able to turn on *their* computer, run a web browser like *Netscape*, and access the undergraduate admission procedures in the College of Music (<http://www.music.unt.edu>), learn about the Information Processing Technology Endorsement in the Department of Technology and Cognition (<http://www.cecs.unt.edu/ipt.htm>) or check the UNT Libraries' schedules (<http://www.library.unt.edu.80/info/>)? All this and more is available to us, literally at the click of a mouse button.

Please see IT on page 3.



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☆ UNT COMPUTING CENTER ORGANIZATION AND FACILITIES ☆

Computing Center Support Services are available in the Information Sciences Building (ISB), Room 119; phone: (817) 565-2324 (TDD 1-800-RELAY-TX). You can contact Support Services via E-mail at HELPDESK (WPO), #CC1/HELPDESK (P-Mail), or HELPDESK @ UNT.EDU (the Internet). Computing Center service divisions:

☐ Academic Computing Services:

- Documentation Services
- ISB 110 General Access Lab (817) 565-3048
- Mainframe User Services
- Research and Statistical Support Services
- VAX/UNIX Systems (817) 565-4161

☐ Mainframe Technical Services:

- IBM Operating Systems Software Support
- Computer Operations

☐ Administrative Computing:

- Admissions Data Systems
- Database/Central Programming Support
- General Data Systems
- NT/UNTHSC Fiscal Data Systems
- NT/UNTHSC Payroll/Personnel Data Systems
- Student Records Data Systems
- Student Services Data Systems
- Voice Response Applications

☐ Network & Microcomputer Services:

- Data Communications
- Microcomputer Application Support
- Network Systems Support



CONNECTING TO UNT COMPUTERS



Host System (OS) Internet Address	Calling Area:	Denton Local Lines		Dallas Metro Lines (based in Lewisville)	Ft. Worth Metro Lines (based in Keller)
	Phone Number:	565-3989	565-3300	214-221-0059*	817-337-0063*
	Speed (bps):	2400-14.4	2400-14.4	2400-14.4	2400-24.4
All dialup lines use 8 data bits, No Parity and 1 Stop Bit					
Academic Mainframe (CMS) ym.acs.unt.edu	Choose a host from the menu. If the host is not in the menu, type: <code>telnet internet.address.here</code> (substituting the correct Internet address).				
Jove (UNIX) jove.acs.unt.edu	Some software and/or file transfer methods require you to disable the terminal server escape sequence, to do this, type: <code>stty tesc none</code>				
Sol (UNIX) sol.acs.unt.edu	*To avoid long distance charges, do not dial a 1 before the metro line phone number. When dialing from outside the metro service area, please consider using the Denton local lines.				
Gopher gopher.unt.edu login: gopher (Do not use this if you have an ID on Jove, Sol, CMS or Ponder)	To go to the telnet command prompt, press <CTRL > Typing quit will close your session.				
WWW www.unt.edu login: www (Do not use this if you have an ID on Jove, Sol, CMS or Ponder)	Etiquette for dialing up the UNT Host Systems: Please do not "camp on" the dialups. There are more users trying to use the dial-up lines than there are phone lines. <i>Please</i> hang up when you are finished.				
Ponder (Computer Sciences Sequent) ponder.csci.unt.edu					
UNT Libraries' on-line card catalog library.unt.edu					

UNIVERSITY OF NORTH TEXAS COMPUTER ACCESS AREA HOURS: Summer 1995

Day of Week	Willis: 134	BA: 334, 335	ISB: 110	Chilton: 255	Chilton: 116	Art: 231	GAB: 330, Wooten: 120	Matthews: 309	Music: 1007	GAB: 550	ISB: 205C	Terrill: 220	ISB I/O Area (138A)
Monday - Thursday	8 am - 10 pm	8 am-MN	8 am-MN	8 am - 10 pm	10 am - 10 pm	9 am-9 pm	8 am-MN	7:30 am - 10 pm	1-10 pm	8 am-6 pm	10 am - 10 pm	CLOSED	Open 24 hrs.
Friday	8 am - 9 pm	8 am - 8 pm.	8 am - 9 pm	8 am - 3 pm	10 am - 3 pm	9 am-5 pm	8 am-3 pm	7:30 am - 5 pm	10 am - 3 pm	8 am-3 pm	Noon-6 pm	CLOSED	Open 24 hrs.
Saturday	9 am - 10 pm	9 am - 9 pm	9 am - 9 pm	10 am - 5 pm	CLOSED	9am-5 pm	CLOSED	10 am - 5 pm	CLOSED	CLOSED	10 am - 6 pm	CLOSED	Open 24 hrs.
Sunday	1-10 pm	Noon-MN	1- 10 pm	CLOSED	CLOSED	CLOSED	Noon-MN	1-10 pm	1-8 pm	CLOSED	1-6 pm	CLOSED	Noon-MN

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Interactive Learning at UNT

By Aaron Price, ACS Documentation Services Assistant (price@cc1.unt.edu)

The concept of the "Studio Classroom" is not new to the world of computer-assisted learning. Now the Computing Center is offering a chance for classroom instructors to develop their own computer-assisted learning curriculum.

Interactive Learning Projects

The Interactive Learning Team (ILT), as mentioned in last month's *Benchmarks* (Vol. 16 No. 2), is composed of Jenny Jopling, Eriq Neale, and Joseph Hoffmann. Together, they work to create multimedia presentations, tutorials, and other teaching tools to allow interactivity between the computer and the student.

Currently the group is working on creating an interactive computer program to be used in PHED 1000, *Scientific Principles and Practises of Health-Related Fitness*. In conjunction with the class instructor, Dr. Alan Jackson, they are developing a program that incorporates lecture notes, multimedia presentations, and even quizzes into a one-stop package students may use to supplement or even replace the classroom lecture.

The benefits of the "Studio Classroom" include more individualized student instruction, financial savings, and better comprehension and retention of the material presented. By using these tutorials the instructors free up valuable lecture time for question and answer sessions between the students and professors. In addition, the money saved by the lower need of Teaching Assistants offsets the cost of the program development. Finally, studies at the Renselaer Polytechnic Institute show that students prefer and are better satisfied with "studio classrooms" (*The Chronicle of Higher Education*, March 31, 1995, p.A19).

Here at UNT, numerous projects are already being planned, developed, and implemented using computer-assisted instruction. The ILT currently is working on the aforementioned *Wellness* class program due to be implemented in testing by Spring of 1996. In addition, Dr. Jeffrey Fitzgerald and Bruce Hunter have recently opened the *Center for Spatial Analysis and Mapping* using a variety of cutting-edge environmental computer technology for instruction in the areas of geographical information systems (GIS). Dr. Larry Gleason is creating a tutorial for students of *Art History Survey I and II* that will assist them in the viewing of slides and provide for better studying techniques.

Like most new ideas these are not without problems. The most significant seems to be the lack of properly equipped computer labs students can access. However, the development of these programs should create the demand needed to have the labs properly outfitted with the equipment needed for the multimedia presentations and interactive programs under development.

Need more information?

If you have an idea you would like to pursue, or simply have some questions about the ILT contact Jenny Jopling at x2324. She will be glad to discuss ideas, explain the procedures in more detail, and even work on finding funding if you would like for them to develop a program. ■

IT continued from page 1.

Of course instructional technology isn't just about making information available, it is about *applying* technology to the educational process. This is being done in all sorts of interesting ways, with more being developed every day, and its not likely to let up.

Jack Treuhaft of Algonquin College of Applied Arts and Technology (<http://www.algonquinc.on.ca/edtech/index.html>) discusses some of the forces behind this technological explosion in education. He identifies four areas that are influencing higher education to embrace instructional technology: developments in the workplace, changes in student demographics, economic pressures, and competition. Following are Treuhaft's examples of driving forces in each area.

□ Developments in the Workplace

- Employers are seeking employees who are technology and information literate.
- The education of new knowledge workers requires emphasis on information access, problem solving, analysis, evaluation, and decision making.
- Rapid change and uncertainty in the workplace encourages employers to seek individuals who already have the required skills.
- Learners need frequent short-term updating as required skills change.
- The increasing number of part-time workers require more flexible access to education.
- The growth of knowledge in any field is rapidly outstripping any individual's ability to remain current. Knowing how to access information rather than memorizing information is central to coping with this rapid change.

□ Student Demographics

- Trends show decreasing numbers of younger students and increasing numbers of older students.

- Older students have more outside-school obligations that need to be considered in academic delivery.
- Growing numbers of students are working part-time while enrolled in full-time programs. Current educational delivery systems do not meet their unique needs.

□ Economic Pressures

- Each year enrollment and operating costs increase, while funding decreases.
- Classroom space within colleges is fully utilized despite the fact that enrollments are expected to increase. There is little or no money for expansion.
- The faculty are already working as hard as they can. Trying to get the faculty to work harder will not produce greater efficiency.
- There is a limit to how high tuition can be raised before students begin to seek less expensive alternatives.

□ Competition

- Private business has begun to see profit potential in offering short, inexpensive market-specific training that appears to be highly relevant to students. This training directly competes with traditional college programs.
- Access to the Internet allows learners to take courses virtually anywhere in the world (accreditation is still a major consideration). There are currently hundreds of courses available from accredited North American colleges in all academic disciplines. Geographic location is no longer relevant. We are in global competition with all other educational providers on the Net.

Treuhaft concludes that to survive these challenges, universities need to find new ways to deliver education to students. "Over the next five years the use of technology combined with other measures will dramatically change the nature of the teaching/learning process." ■

Instructional Development

By Aaron Price, ACS Documentation Services Assistant (price@cc1.unt.edu)

Every day the Interactive Learning Team (ILT) is moving closer to bringing multimedia instruction into the PHED 1000 classroom. The ILT is based in the Computing Center and is currently working on creating an interactive computer program to be used in PHED 1000, *Scientific Principles and Practises of Health-Related Fitness*.

The team consists of Jenny Jopling, Eriq Neale, and Joseph Hoffmann. Each have their own assigned duties but must work together to bring the project to a successful completion.

The PHED 1000 program process began when Dr. Alan Jackson came up with the idea to create an interactive computer program to distribute to his students. He was looking for a way to solve the problems associated with teaching classes with about 500 students. By putting much of the material on an individual computer disk the students can learn at their own pace, review sections they choose, and free up lecture time for more direct question and answer sessions between Dr. Jackson and his students.

A "Day in the Life" of ILT

PHED 1000 instructional development is a dynamic process. Lecture notes, visual aids, graphics, and book material are all combined by Dr. Jackson and given to Jenny Jopling, the ILT design leader.

She then takes those notes and writes an outline for the project that covers all the information Jackson gave her. Next, she writes the actual information that is going to be given to students and designs the individual screens used in the multimedia project. She also attends lectures to get a better grasp of the information she is presenting.

After that is completed the material is sent back to Dr. Jackson for review. After a some editing and updating the final screens are put together by Jopling. These screens include full-motion video animation, sound, and interactivity. Joseph Hoffman assists her in the creation of some of the screens at this stage.

The final screens are then sent to Eriq Neale who puts them together using Authorware on the Macintosh. He compares it to solving a jigsaw puzzle. Neale takes the individual screens and organizes them into a presentation format.

Finally, the finished product comes back to Hoffman, who converts the presentation into a format that can be used on IBM-PC's. ■

UNT Sponsored Projects Administration

The offices of Research Administration and Grant Accounting merged in February, 1995 into the Sponsored Projects Administration (SPA). The SPA is structured into integrated teams, they are the Federal Projects Team, State Projects Team and the Private Projects Team. SPA information can be accessed online via or the World Wide Web at gopher://gopher.unt.edu:70/11/UNT/departments/SPA ■

Exploiting Technology Grants: Information Resources

Compiled by: Tom Wunderle, IBM Academic Consulting and Carolyn Kotlas, MSLS, IAT — Institute for Academic Technology (Information Resource Guides Series #IRG-07) (Last revised: 10/24/94). Copyright 1994, Institute for Academic Technology. IAT documents may be reprinted, in paper or electronic form, without permission from the IAT as long as the contents of the document are not changed and the document is not offered for sale.

Overview

One of the most pressing dilemmas our society faces today is how to stay competitive in a world increasingly saturated with new technologies. Many, if not most, educators are well aware of the need to prepare students for the high-technology work force, and as a result have concentrated in recent years on expanding the uses of technology in the classroom to meet those needs. Unfortunately, the preliminary cost of incorporating new technologies is imposing, and many are reticent to commit to such a venture. The lack of sufficient teacher education in the use of technology is also a problem.

Regardless of these obstacles, most educators still agree that not investing in new educational technologies is imminently more costly to our society in the long run. Continuing to implement new technologies in the classroom is a must if we are to meet our students' needs for the future. But in the face of dwindling educational budgets, where can educators find sufficient funding? This document offers resources on where and how to find funding for computer technology projects in higher education.

Note: Many of the materials listed in this resource bibliography are available through Federal Depository Libraries, local Foundation Centers, cooperative grants libraries and some individual campus libraries. We recommend that you review a copy of these publications before purchasing them to insure that they address your particular needs and interests.

□ U.S. Government Publications

- **Catalog of Federal Domestic Assistance (CFDA)** — The official list of U.S. Government funded (domestic) programs, variously indexed (CFDA #, subject area, agency, etc.)

U.S. Government Printing Office, Supt. of Documents
732 North Capitol St., NW
Washington, DC 20401
202-783-3238, fax: 202-512-1262

- **The Federal Register**

U.S. Government Printing Office, Supt. of Documents
732 North Capitol St., NW
Washington, DC 20401
202-783-3238, fax: 202-512-1262
Daily (monthly index & LSA - List of CFR sections affected)
\$444/year, \$6 each edition

The Federal Register provides public notice of actions, reports, and decisions in all areas of regulatory concern, in order to permit public comment and compliance. On a cumulative basis they document regulatory actions, and comprise the official public record of actions or revisions to the codes of federal regulation (CFR).

- **Combined Application Notice (CAN) Issue** — U. S. Department of Education's annual listing of educational grants published in the Federal Register.

- **Foundation Center Publications**

Foundation Center Publications
79 Fifth Avenue
New York, NY 10003-3076
800-424-9836

The Foundation Center is an organization that represents the major U.S. Foundations. The Center provides information and services to help grant seekers research foundation grant opportunities that address their needs. Some major cities have local Foundation Centers.

- **The Foundation Directory (1994)** — Compendium of over 6,700 funders with assets over \$2M and those who fund over \$200,000 each year.
- **The Foundation Grants Index** — Source of information on recent grantmaker awards; covers the grantmaking programs of over 950 foundations, including over 65,000 grant descriptions.
- **The Foundation 1000** — Provides detailed information on the grantmaking programs of the 1,000 largest U.S. foundations.
- **Guide to U.S. Foundations, Their Trustees, Officers, & Donors** — Reference book on all U.S. grantmaking foundations; over 35,700 private, corporate and community foundations.

□ Weekly Newsletters

- **Aid for Education Report**

CD Publications
Silver Spring, MD
800-666-6380

- **Education Grants Alert**

Capitol Publications Inc. (CPI)
1101 King St., Box 1453
Alexandria, VA 22313-2053
800-655-5597

• Federal Grants & Contracts Weekly

Capitol Publications Inc. (CPI)
1101 King St., Box 1453
Alexandria, VA 22313-2053
800-655-5597

□ Non-Government Directories, Guides and Information Services

• CIS Federal Register Index (Congressional Information Services) — Published weekly (updates), \$645/year.

CIS Inc.
4520 East-West Highway
Bethesda, MD 20814
301-654-1550 / 800-638-8380

• Effective Evaluation: A Systematic Approach for Grantseekers and Project Managers

Capitol Publications Inc. (CPI)
1101 King St., Suite 444
Alexandria, VA 22314
800-655-5597

• Federal Funding Guide (1980-1990)

Government Information Services (GIS)
4301 N. Fairfax Dr., Suite 875
Arlington, VA 22203
800-876-0226

A comprehensive source of applicable grant administration requirements. It provides an analysis of the processes involved in managing federal grants.

• Federal Grants Management Handbook (with updates)

Grants Management and Advisory Service
Thompson Publishing Group
Washington DC, 1994
800-677-3789

• Funding Database Handbook, 1991 — FRI (Funding Research Institute in cooperation with Government Information Services and Education Funding Research Council)

Government Information Services
4301 N. Fairfax Dr., Suite 875
Arlington, VA 22203
800-876-0226

• The Grantseeker's Guide to Project Evaluation

Capitol Publications Inc. (CPI)
1101 King St., Suite 444
Alexandria, VA 22314
800-655-5597

• Guide to Federal Funding for Education (2 vols), 1993

Government Information Services (GIS)
4301 N. Fairfax Dr., Suite 875
Arlington, VA 22203
800-876-0226

• Guide to Federal Funding for Governments and Non-profits, 1994

Government Information Services (GIS)
4301 N. Fairfax Dr., Suite 875
Arlington, VA 22203
800-876-0226

• Oryx Directory of Grants in the Humanities 1994/95, Eighth Edition.

Oryx Press
4041 North Central at
Indian School Rd.
Phoenix, AZ 85012-3397
800-279-6799

• Winning Science Equipment Grants: Model Proposals from the Federal and Private Sector

Capitol Publications Inc. (CPI)
1101 King St., Suite 444
Alexandria, VA 22314
800-655-5597

□ Books/Papers

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Chelekis, George C. *The Action Guide to Government Grants, Loans and Giveaways*. New York: Perigee Books, 1993.

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Gellman-Danley, Barbara. *Telecommunications and Distance Education: A Guide for Proposal Development*. Boulder,

CO: Western Cooperative for Educational Telecommunications, 1993. (303-541-0200).

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Simmons, Patty. "Grantsmanship Can Get It All Started." *Communication: Journalism Educa-*

tion Today (C:JET) 24 (Summer 1991): 20.

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Stanton, Susan. "The Big Picture: Corporate and Foundation Sources of Nationwide Giving." *Technology & Learning* 2 (January 1992): 38-47.

Wilson, Tom. "Where to Find Funding for Your Technology Project." *Technology & Learning* 12 (January 1992): 36-38.

□ Associations

• EDUCOM

Interuniversity Communications Council Inc.
1112 16th St., NW, Suite 600
Washington, DC 20036
202-872-4200
Gopher address: ivory.educom.edu

• Institute for Academic Technology (IAT)

2525 Meridian Parkway, Suite 400
Durham, NC 27713
919-560-5031
Email: info.iat@mhs.unc.edu

• League for Innovation

26522 La Alameda, Suite 370
Mission Viejo, CA 92691
714-367-2884
Gopher address: gopher.league.org

• National Council for Resource Development (NCRD) (Affiliate of the American Association of Community Colleges)

Suite 410, One Dupont Circle, NW
Washington, DC 20036-1176
202-822-0750

• Instructional Telecommunications Consortium (Affiliate of the American Association of Community Colleges)

Suite 410, One Dupont Circle, NW
Washington, DC 20036-1176
202-822-0750

• Western Cooperative for Educational Telecommunications

WICHE (Western Interstate Commission for Higher Education)

P.O. Drawer P
Boulder, CO 80301-9752
303-541-0231

□ Online/Electronic Media Resources

Note: The following online resources represent only a broad survey of the many information services that are available. You should be aware that these include commercial (fee based) services, 800# and long distance direct dial services, as well as Internet accessible (gopher, listserve, telnet, etc.) information. Before subscribing to any fee-based services and/or logging on to long distance connects for extended periods, we suggest that you contact the information providers to insure that the information is relevant and useful for your purposes.

- **The Chronicle Guide to Grants** (by editors of Chronicle of Higher Education & Chronicle of Philanthropy) Diskette/CD-ROM grants database with more than 10,000 grant listings.

1255 Twenty-Third St., NW
Washington, DC 20037
800-287-6072

- **Counterpoint Publishing** — Online and CD-ROM Federal Register and Commerce Business Daily on internet in searchable form. 800-998-4515

- **DELPHI** — 800-695-4005 Email: INFO@delphi.com Online and diskette.

- **DIALOG Information Services** — 800-334-2564 Online and CD-ROM databases.

- **EDBOARD** (Dept. of Education BBS) — Grants and contract information online. 202-260-9950.

- **EDUCOM** (gopher) — Documents/news published by EDUCOM. Gopher address: ivory.educom.edu

- **FAPRS (Federal Assistance Programs Retrieval System)** — Source: GSA (U.S. General Services Administration, Info Resources Mgmt Service). A billable service that provides CFDA (on diskette) &

Federal Register information (online)

Federal Domestic Assistance
Catalog Staff
300 7th St., SW
Washington, DC 20407
202-708-5126

- **FEDIX (Federal Information Exchange)** — Free government BBS/database retrieval service with information on a number of agencies including NSF, DOE, Commerce. US Dept. of Energy, Office of Science Education & Technical Information. Washington, DC 20585 Modem: 800-783-3349 Internet: Telnet fedix.fie.com or 192.111.228.33 Helpline: 301-975-0103
- **FEDWORLD (NTIS)** — Source: National Technical Information Service (Dept. of Commerce)
5285 Port Royal Rd.
Springfield, VA 22161
Internet Server with only a telnet connection now; working on ftp and email. Full Federal Register scheduled to be online June 1994; there will be a charge for this.
- **FREND (Federal Register Electronic News Delivery Service)** Office of the Federal Register Online Federal Register since 1/2/94 (volume 59, #1) Available on WAIS through the internet and via asynchronous dial-in. 1 workstation = \$375/year; \$200/6 months, \$35/month (quantity discount available) To subscribe, telnet wais. access.gpo.gov. Login *newuser* (lowercase). No password needed. Or dial in to 202-512-1662. Login as *wais* (lowercase). No password required. Login at second prompt as *newuser*(lowercase). 202-275-1538 / 202-275-0920
- **GrantsNet** — A pilot electronic network supported by the Dept. of Health & Human Resources and The Grantsmanship Center.
1125 W. Sixth St., 5th floor
PO Box 17220
Los Angeles, CA 90017
213-482-9860

Email: tgcorton@aol.com.

- **The GRANTS Database** — Online/CD-ROM/print Access through DIALOG Information Services 800-3DIALOG
- **GrantSearch CFDA** — Diskette federal grants database.
Capitol Publications Inc. (CPI)
1101 King St., Suite 444
Alexandria, VA 22314
800-655-5597
- **IKE (IBM Kiosk for Education)** — Gopher address: ike.engr.washington.edu, or gopher.ibmblink.ibm.com World Wide Web (Mosaic) address URL: <http://ike.engr.washington.edu/ike.html>
- **LCMARVEL** — Library of Congress Gopher Federal Government information including grant announcements, abstracts, CFDA index. Gopher address: marvel.loc.gov
- **NIH Grantline** — Source: National Institute of Health Dataline: 301-402-2221 Info: Dr. John James (NIH), 301-594-7270
- **NTIA BBS** — 202-482-1199
- **SPIN (Sponsored Projects Information Network)** — Information Education, Albany NY Database of government, foundation and some corporate sponsors. 800-727-6427 Email: edd@infoed.org
- **STIS (NSF Bulletin Board/Gopher)** — Grant announcements, abstracts, guidelines. Gopher address: stis.nsf.gov
- **UNC Office of Research Services** — Services: Interface to the Grant-Source Service Telnet to groucho.admin.unc.edu, login as swais (lower case) Info: Dottie Baker, 919-962-3463 Email: dsbaker@groucho.admin.unc.edu

Bibliography Related to the Education of Instructional Designers

By James Quinn (james-quinn@uiowa.edu), The University of Iowa.

This bibliography is part of an on-going project related to the graduate preparation of instructional designers. It was posted on March 20, 1995 to InTRO: Repository of Instructional Research (<http://129.8.48.23/InTRO/Research.html>). The author welcomes "questions, comments, or suggestions for additional references that you have found particularly useful."

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Please see BIB on page 10.

Associations Involved in Multimedia Development and Related Activities

Compiled by Carolyn M. Kotlas, MSLS Last revised: 03/08/95 Institute for Academic Technology (Information Resource Guides series # IRG-10). Copyright 1995, Institute for Academic Technology. IAT documents may be reprinted, in paper or electronic form, without permission from the IAT as long as the contents of the document are not changed and the document is not offered for sale.

These professional associations sponsor publications, conferences, workshops, and other activities in the areas of multimedia, computer graphics, computer music, and other digital presentation technologies.

- **AACE**

Association for the Advancement of Computing in Education
P. O. Box 2966
Charlottesville, VA 22902
804-973-3987 Fax: 804-978-7449 Email: aace@virginia.edu

- **AAIM**

Association for Applied Interactive Multimedia
State Board for Technical and Comprehensive Education
111 Executive Center Drive
Columbia, SC 29210 Fax: 803-737-7440

- **ACM CHI**

Association for Computing Machinery
Special Interest Group for Computer and Human Interaction
1515 Broadway
New York, NY 10036-5701
212-626-0500 Fax: 212-944-1318
Email: acmhelp@acm.org URL: <http://info.sigchi.acm.org/sigchi/>

- **ACM SIGGRAPH**

Association for Computing Machinery
Special Interest Group on Computer Graphics
1515 Broadway
New York, NY 10036-5701
212-869-7440 Fax: 212-944-1318
Email: acmhelp@acm.org URL: <http://siggraph.org/>

- **ACM SIGLINK**

Association for Computing Machinery
Special Interest Group on Hypertext and Hypermedia
1515 Broadway
New York, NY 10036-5701
212-869-7440 Fax: 212-944-1318
Email: acmhelp@acm.org URL: <http://info.acm.org/siglink/>

- **ACM SIGMM**

Association for Computing Machinery
Special Interest Group on Multimedia Systems
1515 Broadway
New York, NY 10036-5701
212-869-7440 Fax: 212-944-1318
Email: acmhelp@acm.org URL: <http://info.acm.org/sigmm/>

- **AECT**

Association for Educational
Communications and Technology
1025 Vermont Ave., NW, Suite 820
Washington, DC 20005
202-347-7834
URL: gopher://sunbird.usd.edu:72/1

- **AIIM**

Association for Information and
Image Management
1100 Wayne Ave., Suite 1100
Silver Spring, MD 20910-5603
301-587-8202 Fax: 301-588-4838

- **AMI**

Association for Multi-Image
10008 N. Dale Mabry, Suite 113
Tampa, FL 33618 813-960-1692

- **AVC**

Association of Visual Communicators
8130 La Mesa Blvd., No. 406
La Mesa, CA 91941-6437
619-461-1600

- **EG Eurographics — European Association for Computer Graphics**

Eurographics UK
P.O. Box 38, Abingdon
Oxon, OX14 1PX
Email: info@eg-uk.co.uk
<http://www.cwi.nl:80/Eurographics/>

- **ICIA**

International Communications
Industries Association
3150 Spring St.
Fairfax, VA 22031-2399
703-273-7200
Email: icia@aol.com

- **ICMA**

International Computer Music
Association
2040 Polk Street, Suite 330
San Francisco, CA 94109
408-395-2538 Fax: 408-395-2648
Email: icma@sjsuvm1.sjsu.edu
URL: <http://coos.dartmouth.edu/~rsn/icma/icma.html>

- **IEEE Computer Society**

Technical Committee on
Computer Graphics
1730 Massachusetts Ave., N.W.
Washington, DC 20036-1992
URL: <http://www.ieee.org/>

- **IIA**

Information Industry Association
555 New Jersey Ave., NW Suite 800
Washington, DC 20001
202-639-8262 Fax: 202-638-4404 Email: iiastaff@access.digex.net

- **IICS**

International Interactive Communications Society IICS Executive Office
Attn: Debra Palm
14657 S.W. Teal Boulevard
Beaverton, OR 97007-6194
503-579-4427 Fax 503-579-6272 Email: iics@netcom.com URL: <http://www.iics.org>

- **IMA (formerly IVIA, Interactive Video Industry Association)**

Interactive Multimedia Association
48 Maryland Ave., Suite 202
Annapolis, MD 21401-8011
410-626-1380 Fax: 410-263-0590 Email: nancy@ima.org

- **ISA**

Interactive Services Association
8403 Colesville Rd., Suite 865
Silver Spring, MD 20910
301-495-4955 Fax: 301-495-4959

- **ITVA**

International Television Association
International Office
6311 N. O'Connor Rd., Suite 230
Irving, TX 75039 214-869-1112
Fax: 214-869-2980

- **MPC**

Multimedia PC Marketing Council
1730 M. Street, NW, Suite 700
Washington, DC 20036-4510
202-331-0494

- **NAB**

National Association of Broadcasters
1771 N Street, NW
Washington, DC 20036-2891
800-368-5644 or 202-429-5373

- **NMAA**

National Multimedia Association of America World Headquarters
4920 Niagara Rd., 3rd Floor
College Park, MD 20740
800-214-9531 or 301-474-4107 Fax: 301-513-9466 Email: join@nmaa.org

- **SALT**

Society for Applied Learning Technology
50 Culpepper St.
Warrenton, VA 22186
703-347-0055 or 800-457-6812

- **SIGRAD**

Svenska foreningen for grafisk databehandling
(Swedish Association for Graphical Data Handling)
c/o Olov Fahlander Institutionen for Systemteknik

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Winn, W. (1989). "Toward a rationale and theoretical basis for educational technology." *Educational Technology Research and Development*, 37(1), 35-46.

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Librarians Plan Digital Library

Edupage 5/14/95, originally appeared in the *Chronicle of Higher Education* 5/12/95 A28.

A group of 16 signatories have agreed to work together to coordinate efforts to build a broadly accessible digital library. Signers to "America's Heritage: Mission and Goals for a National Digital Library Federation"

Please see Lib on page 12.

Distance Learning at UNT

Video conferencing and Distance Learning at UNT just took a giant leap forward with the recent UNT purchase of a VTEL video conferencing system. The VTEL system will be housed in Chilton Hall, Room 245, which was originally the Tager classroom. The Tager classroom has been moved to the Media Library, Chilton 111D.

An identical VTEL system has also been purchased for the Health Science Center in Ft. Worth. This will enable UNT and UNT/HSC to engage in 2-way video and audio conferences without the participants having to leave their respective campuses. To further extend the capabilities of this new video conferencing system, plans are also underway to connect to the Texas A&M Trans-Texas Videoconference Network. When that is accomplished, UNT and UNT/HSC will be connected to over 28 sites throughout the state of Texas.

Plans are underway to connect UNT and UNT/HSC to TWU and East Texas State University so that UNT/ETSU/ TWU Federation courses can be taken via the system. The VTEL system provides the ability to share guest speakers and other resources between campuses, which should prove to be a valuable asset in years to come.

For more information about this new video conferencing system, contact Paul Gandel in the Computing Center (565-3854; gandel@unt.edu). ■

Internet Resources on Distance Learning

Retrieved from <http://wwwetb.nlm.nih.gov/workshop/internet/distlrn/>

- **Clearinghouse for Subject Oriented Internet Resource Guide** — <http://sils.umich.edu/~lou/chhome.html>
- **EOS** — http://netspace.students.brown.edu/eos/main_image.html
- **Educational Technology Services and The World Wide Web, Univ. of Penn** — http://ccat.sas.upenn.edu/ETS_home.html
- **GASNet Hypermedia Anesthesiology Server Network** — <http://gasnet.med.nyu.edu/HomePage.html>
- **GNN** — <http://nearnnet.gnn.com/wic/med.toc.html>
- **Lee Hancock's Guide to Internet Health Sciences** — anonymous ftp from <ftp.sura.net> in pub/nic medical resources (Mosaic URL) <ftp://ftp.sura.net>
- **Martindale's Health Science Guide 1995** — <http://www-sci.lib.uci.edu/~martindale/HSGuide.html>
- **Medical Matrix Collaboration between Internet Working Group and AMIA** — <http://kuhttp.cc.ukans.edu/cwis/units/medctr.Lee/HOMEPAGE.HTML>
- **Medical Resources on the Internet** — <http://planetree1.utm.edu/NetResources/NetResources.html>
- **Maricopa Center for Learning and Instruction (MCLI)—Teaching and Learning on the Web** — <http://hakatai.mcli.dist.maricopa.edu/TL/index.html>
- **NASA** — <http://www.nas.nasa.gov/HPCC/K12/edures.html>
- **Nightingale University of Tennessee, Knoxville, School of Nursing** — <http://nightingale.con.utk.edu:70/0homepage.html>

- **Osaka Medical College World Wide Web Server** — <http://www.osaka-med.ac.jp/>
- **Other Internet Health Science Resources Home Page** — <http://vh.radiology.uiowa.edu/internet/health.html>
- **Penn. State—The Milton S. Hershey Medical Center—Department of Radiology—Radiology Resources in CyberSpace** — <http://xray.hmc.psu.edu/home.html>
- **Teaching and Learning with the Web—Future Projects** — <http://tecfa.unige.ch/edu-ws94/ws.html>
- **The WWW Library : Biosciences** — <http://golgi.harvard.edu/biopages/all.html>
- **Yahoo** — <http://www.yahoo.com/> ■

Lib continued from page 11.

include the Commission on Preservation and Access, the Library of Congress, the National Archives, the New York Public Library and 12 universities. Initial funding will come from participating institutions, according to Stuart Lynn, the preservation commission's VP for technology: "These kinds of things aren't going to be one centrally controlled activity. (It will) bring together — from across the nation and beyond — digitized materials that will be made accessible to students, scholars and citizens everywhere, that will be made accessible to students, scholars and citizens everywhere, and that will document the building and dynamics of America's heritage and cultures." ■

The Network Connection

By Dr. Philip Baczewski, Assistant Director, Academic Computing Services (baczewski@unt.edu)

*This column is a continuing feature of **Benchmarks** intended to present news and information on various aspects of wide area networks.*

Searching the Internet

By now you probably know that there's a lot of information and resources out there on the Internet, but you may not know of a good way to find what you need. One of the challenges of the Internet, as the amount of information has grown, has been to make the information accessible to humans, who have a limited amount of time that they can apply to searching a world-wide network. Fortunately, computers can do the searching for us and there are several Internet search packages that have been developed to do just that.

Presented here is an overview of finding things on the Internet. This article will present enough information to get you started. If you need more help using one of the resources discussed below, you can consult on-line help for some of them or contact Computing Center Support Services at 565-2324. If support services can't answer your question, they can refer you to someone who can (maybe me).

Finding Files with Archie

One of the first things that attracted people to the Internet was the numerous archives of information and programs that people made available via anonymous ftp. Archie was developed at McGill University in Canada as a way for them to organize their software archives for their on-campus users. It soon became evident that this could be applied to Internet anonymous ftp archives and the archie software became available to others on the Internet. Archie servers run at various places on the Internet and can be accessed via clients on UNIX, Macintosh, DOS, MS Windows and other platforms. There is also a Gopher to Archie gateway. On the UNT Gopher, you can find the gateway under "Remote Information & Resources on the Internet/Popular Ftp (software Libraries) Sites & Searches/Archie Searches."

On UNIX (Sol or Jove), you can type **Archie string**, where "string" can be all or part of the name of a program or file. If Archie can find a match, it will display the Internet addresses and file paths for the items it finds. You can then use the information to access that file via anonymous ftp. For more information about searching with archie, you can refer to the document, *Introduction to the Internet*, available from the Computing Center in ISB 119.

Searching Gopher

Gopher is one of the pillars upon which is built the temple of Internet information. O.K., maybe it's not a temple, but it's an awfully big room. Finding things on even a single Gopher server can be a monumental task, even if you've used that item before. It's like laying down your car keys somewhere in the house and then forgetting where and having to search every room. There are two search utilities for

Gopher. One for local information and one which finds items on Gophers throughout the world.

Veronica is a server system that works along side Gopher to build a searchable index of information that includes most of the Gopher servers in the world. Veronica was written after Archie. While the name Archie came from a variant of "archive," veronica was apparently a reference to the comic book character, although veronica is officially an acronym for a much longer name. You can access Veronica through UNT's Gopher in the menu, "Remote Information & Resources on the Internet/Other Gopher, Information Servers & Searches/Search All the Gopher Servers in the World." If you select that item, you will be prompted to enter a search string. You can enter one or more words and use the logical operators AND, OR and NOT. For more search services and information about using veronica, check out the menu "Search titles in Gopherspace Using veronica." You will find a veronica FAQ file and documentation on composing searches.

Jughead is veronica's cohort (so to speak) that does local Gopher searches. You guessed it: jughead is officially an acronym too, but it is another search program and the program's creator didn't give it its name accidentally. On the UNT Gopher, jughead is found on the top-level menu as "Search Menu Titles of UNT Gopher by Keyword." If you select that item you will be prompted to enter some search information. Like veronica, jughead will accept one or more words and also support the use of AND, OR, and NOT. This is a handy way to search for locally available documentation or to find if on-campus departments are participating in Gopher. Many other Gopher servers run jughead for their menu structures so if you access a remote gopher, look for a similar menu item to make finding information easier.

List of the Month

Each month we will highlight one BITNET, Internet, or USENET Special Interest Group (SIG) mailing list. This month's list...

FACSUP-L

Owner: Ted Mills, Faculty Resource Coordinator, University of Connecticut, Storrs, CT 06269-3138 (tmills@uconnvm.uconn.edu)

FACSUP-L is devoted to supporting faculty efforts to use computer technology in their work. As computer technology changes conceptions of teaching and learning, faculty need more assistance with the tools for these changes. Part of the list's mission will be mutual support among people charged with support of faculty in the computing-skills self-training process. The list will also be a forum for sharing of specific needs, experiences, ideas and resources for the day-to-day support of faculty. Support center staffs and faculty are invited to participate in the list.

To subscribe to FACSUP-L send E-mail to list-serv@uconnvm.uconn.edu with the following message: **subscribe FACSUP-L Firstname Lastname** substituting your own first and last names.■

World Wide Web Searching

There are several search services which will help you find stuff on the World Wide Web. You can access these sites by using a Web browser like Mosaic or Netscape. The World Wide Web is not completely indexed, but a couple of places can let you find a whole lot of information.

Yahoo, is a Web search site that was started at Stanford University, but has since gone "private." You can find Yahoo at <http://www.yahoo.com/>. Yahoo categorizes Web pages by topic, and its home page has the major topic headings listed. You can also search the entire collection on any keyword. They'll also take suggestions for home pages to add. The collection is quite extensive.

Lycos is another Web search service from Carnegie Mellon University. It's URL is <http://lycos.cs.cmu.edu/>. You can register or delete your own pages and you can search the pages it knows

about. The Lycos small Web age catalog has about 566,000 pages register, and the "big" catalog has 3.85 million web pages that it searches. The Lycos home page provides access to statistics on its use and to documentation so that you can learn more about it.

Webcrawler is a more modest search facility from the University of Washington. You can find it at <http://webcrawler.cs.washington.edu/cgi-bin/WebQuery>. Like the previous two, you can enter a keyword or multiple words and it will return any pages which match your query.

Finding People on the Net

A couple of different resources exist which allow you to look for people's E-mail addresses via Web or Gopher. On the UNT Gopher, you can investigate the on-line phone books in the

Please see Net on page 15.

News From the CWIS/Gopher Hole

By Doug Bateman, CWIS Coordinator
(dbateman@unt.edu)



This column covers features and resources available through the University's Gopher Campus Wide Information System (CWIS). Gopher is available on various UNT host computers including the VAX, Sol, and Jove. It is also available in the General Access Labs and on various Novell file servers around campus.

Fly the Unfriendly Skies

April 10 - 13 found yours truly enjoying the sights, sounds, and attractions of Internet World 95 in San Jose California. More about that in a moment, but first I have to tell you that I wasn't sure that I was ever going to get there. April 10th was one of those wonderful Texas spring days when a wall of thunderstorms sweeps over the Dallas-Ft. Worth area with hardly a warning. It was my bad luck that my plane left the terminal just a couple of minutes too late to avoid the storms, so we had to wait on the runway for the storms to pass through...and we waited...and we waited...and **FOUR HOURS** later we were finally given clearance to take off! Unbelievable!

Now, I came to Texas from northern Colorado and have flown many times into and out of Stapleton Airport in Denver. I've seen flights arrive and depart in snowstorms, but a little Texas thunderstorm kept us grounded on a DFW runway for four hours. I thought Texans were supposed to be tougher than that.

Fortunately, the conference and show proved to be worth the problems getting there.

Internet World 95

This show was sponsored by Mecklermedia, publishers of Internet World (which I have highly recommended before in this column) and CIX, the Commercial Internet Exchange. It was altogether too short, but then, aren't they all. I was able to attend several seminars and conference sessions, and wore my feet out attending the exhibits of almost 200 vendors, organizations, and services. I was able to add quite a bit of "vendor kool-aid" (jargon for the freebies that exhibitors give away at these affairs) to my collection as well as being selected to beta test a couple of products upon my return.

I attended informative conference sessions on Internet security and conducting secure transactions via the Internet, distance learning, the law of cyberspace, and sessions on the impact of the Internet on all of us, connected or not. I gained a lot of technical knowledge that I hope to be able to apply our campus World Wide Web services to make them better, stronger, and more in tune to your needs.

The exhibits allowed me to get a good look at commercial products I had previously only read about. I was also able to bring back with me a number of demos and

product literature, so if anyone has questions about a particular commercial web browser or server, a commercial Internet provider or service, or one of the Internet-tools suites, contact me for information. I might have something right at hand that could help you make a decision.

The most striking feeling I got by attending the exhibition was how commercial the World Wide Web has become. It seems that everywhere I turned was yet another company that was selling their particular flavor of web browser (often some variant on Mosaic) or that, for a "nominal" fee, would turn your ideas or your enterprise into striking web documents that would become HTML works of art. Most of my fellow conference-goers were apparently in the employ of some company that was viewing the WWW as another marketing tool to reach masses of potential customers. I left with a renewed enthusiasm for my role with an academic institution, where profit is not the sole motive for providing simple and efficient access to information.

In his April 16 column in the San Jose Mercury News, Dan Gillmor, Computing Editor, echoed my feelings quite well. He wrote that one of the things that "...helped make 'the Internet what it is today...was a collection of free-for-the-browsing information storehouses all over the world, put together by people who understood and enhanced the Net's culture of voluntarism and sharing. This being America, of course, it couldn't last." Now, he goes on to say, we have major corporations that are "...bringing something to the New Internet—the capitalist Internet [is] emerging from the ruins of the old one...bringing customers to the people and services on the Net."

The most telling example I have run across of this emerging "New Internet" is the latest news concerning Yahoo, the web site begun by two doctoral students at Stanford University in their spare time that has proven

to be an immensely popular searchable index to the WWW. They made an appearance as exhibitors at Internet World—their studies placed on “temporary” hold as they, with the help of a prominent venture capital firm, are commercializing Yahoo. It appears that they will be getting their cut of the profits to be had by selling space in their index to companies anxious to increase their web exposure. <sigh>

Well, change is inevitable and one of my responsibilities to you is to not allow myself to be jaded by any changes that might otherwise be unappreciated by me. Even UNT is becoming a part of this new culture as I become more involved in devising ways and means of marketing the university to prospective students and faculty via our web and gopher servers. The interesting thing is that, commercial motivation or not, everyone will benefit from the increase in information being served via the Internet.

Prologue

Well, this article certainly took on a persona of its own. I started with a completely different set of ideas in mind, but it seemed to take on a life by itself that led me on. Here, for your enjoyment(?) are some tidbits that I had intended to sprinkle throughout the article I was going to write.

Yahoo has changed their location. In keeping with their new thrust, they can now be reached via the URL <http://www.yahoo.com/>. Please be sure to change any pointers to their old location at akebono.stanford.edu to the new one. It currently indexes 30,000 individual web documents out of the estimated 5,000,000 currently in existence.

The last figure that I ran across estimating the growth rate of new web sites indicated that the number of web sites in the world was doubling every 53 days! Consider this also: when Mosaic was first introduced just two years ago, there were only 50 web sites world wide. I don't know about you, but my hotlist contains more sites than that.

The figures for the first quarter of 1995 show that for the first time ever, the growth rate in the number of commercial domains (i.e. something.something.COM) exceeded that for educational (.EDU) domains.

Current versions of Internet/WWW tools:

Mosaic	2.0b4
Netscape	1.1N (production release dated 4/25/95)
Trumpet WinSock	2.0 Beta
WinWeb	1.0a3 (no change for quite a while)
Cello	1.01 (2.0 due Real Soon Now)

Since the older I get, the more I seem to write like Jerry Pournelle, I may as well include my recommendation for the book of the month just as he does in his monthly Byte magazine column. Highly recommended: *Trouble and Her Friends*, by Melissa Scott, published by Tom Doherty Associates, Inc., NY. A well written work of science fiction where THE way to surf the Net is to get a neural implant by which you connect, thus transforming all the nodes, data, fellow Net surfers, etc. into user-defined sights, smells, tastes, and tactile impressions. I wish I could remember the name of the person on campus who recommended this to me because I'd like to thank him. I had one devil of a time finding a copy but it was well worth the search. ■

Net continued from page 13.

menu “Remote Information & Resources on the Internet/Telephone & E-Mail Directories/Phone books at other institutions.” There are currently 431 Internet phone books from the U.S. And around the world.

A different kind of directory, based on the X.500 directory services protocol, can be accessed via the University of Michigan. Point your Web browser at <http://judgmentday.rs.itd.umich.edu:888/M> for a view of what countries are represented in the X.500 database. You can select a country and browse down the tree or do a search at that level. X.500 is organized hierarchically, so to find someone at the University of Texas at Austin, you would select USA, then Texas, then University of Texas at Austin, then People, and then Faculty/Staff, etc. Once you get to the organization level (i.e. UT), then you can search for a particular name. ■

Higher Ed Web Page List

Posted to net-happenings@dstest.internic.net This originally appeared in (*Chronicle of Higher Education* 2/24/95 A27)

A former MIT student has compiled a list of 1,000 colleges and universities that have World Wide Web pages.

About 570 of the entries are U.S., and the rest foreign.

See <http://www.mit.edu:8001/people/cdemello/univ.html> ■

New Dial-Up Service Planned

By Bill Buntain, Director of Network and Microcomputer Services (buntain@unt.edu)

The Computing Center has received permission to implement a mechanism to recover the operating costs associated with a major expansion of its remote access facility. The planned expansion will be operated as a separate facility. Users will need to subscribe to the service which will provide a guaranteed maximum user to line ratio of 7:1. This means that the number of users granted access to the service will be limited by the number of available lines. Subscription will be by semester. At present, the charge for the service is based on a monthly cost of \$10 for local area users and \$20 for Metro area users. However, a number of alternatives are being pursued to reduce the cost of the service, particularly for Metro area users.

The Computing Center will also be expanding the range of remote access services it provides. The initial roll out will include SLIP and PPP support. SLIP and PPP support will also be added to the free dialup lines. Future implementations planned include IPX remote node and remote control access for access to Novell networks and either ARNS or ARAP support for access to Appletalk networks. Alternatives which will support ISDN are also being investigated.

Particulars regarding when the service will be available and how to subscribe to it will be forthcoming. They will be published as they become available in *Benchmarks* and various UNT newsgroups available (i.e., unt.networking, unt.general) through the USENET News service. Electronic notices will also be put into the news systems of various host computers. Colleges and lab support organizations will also be notified. ■

Chain Letters and Account Privileges

By Eriq Neale, ACS Lab Manager (neale@unt.edu)

There has been another rash of chain letters going through E-mail on campus. This reminder about chain letters is accompanied by a new statement of action. In previous warnings about distributing chain letters, I indicated that a person doing so could lose their account on ACS and other host systems. Now, anyone sending a chain letter through E-mail from ACS will *automatically* lose his or her ACS account, and I will recommend removal of any other accounts this person may hold on other host systems.

Let me make the point clear. Do not forward any chain letter you may have received recently to anyone. If you have received a chain letter via E-mail, delete it immediately. If you receive a chain letter via E-mail at any point in the future, delete it immediately. Anyone who sends a chain letter via E-mail from his or her ACS account will have that account removed.¹

I will gladly answer any questions you may have about this issue, or any other issue relating to your ACS account. Please direct your inquiries to me via E-mail at neale@acs.unt.edu.

¹ A chain letter is a letter sent to several people with a request that each send copies of the letter to even more people. "Luck" or "misfortune" is frequently associated with these letters, although they could just as easily contain requests for recipes or something else. ■

The Unabomber Strikes Again

By Claudia Lynch, *Benchmarks* Editor (lynch@unt.edu)

Articles about the "Unabomber," a person who appears to hate technology and want's to kill those he associates with it, have appeared from time to time in *Benchmarks*. The most recent article was in the January/February 1995 issue (Vol. 16, No. 1, pg. 11). The bomber appears to be stepping up his violent activity and also his communication with the outside world. He sent two threatening letters to Nobel scientists on April 20, 1995, the same day he mailed a fatal bomb to a timber industry lobbyist in Sacramento. He wrote a letter to The New York Times stating, "The people we are out to get are the scientists and engineers, especially in critical fields like computers and genetics." Although the bomber talks about himself as if he were a member of a group, authorities are fairly certain that he is acting alone (TIME, May 8, 1995 Vol. 145, No. 19).

Because of the Unabomber's stepped-up activity and his antagonism toward technology and those who employ it, it seemed advisable to caution you about a few things. Following are some suggestions given out to IEE Staff and Volunteers (as reported in CPSR Announcements — cpsr.announce@cpsr.org or comp.org.cpsr.announce), which make sense for those of us at UNT also:

- ❶ DO NOT respond to any request from the news media for a statement about the Unabomber, violence toward the technical or engineering professions, or related topics. (The reporter could, for example, ask for a quote explaining "because you work for an engineering society and/or are an engineer.") If you receive such a call, do not give in to any pressure the reporter might try to use about being "on deadline." Simply take down the caller's name,

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phone number and news organization, and immediately notify [PAIS here at UNT — 565-2108].

- ② Familiarize yourself and your families with the following guidelines from the USPS Inspection Service regarding suspicious packages received in the mail.

A mail bomb may have one or more of the following characteristics:

- Oil stains on the outside.
- Peculiar odor, protruding wire(s), or foil.
- Overly heavy for its size.
- Weight unevenly distributed.
- Thick and bulging, as if over-stuffed.
- Endorsed as RUSH, FRAGILE, HANDLE WITH CARE, etc.
- Addressed to a prominent official and sent restricted delivery and/or "eyes only," "personal," "confidential," etc.
- Title of the recipient may be inaccurate or derogatory.
- Common words misspelled in the address.
- Address may have distorted handwriting, be made from cut & paste lettering, prepared on a homemade label.
- Usually has stamps; meter strips are easily traced.
- Excessive postage. (A bomb sent to a Federal judge had this characteristic. Also, the bomb, allegedly sent by white supremacists, used stamps with a highly patriotic theme, i.e., flag stamps, Thomas Paine, and the \$1 "candle stick" stamp.)
- No return address, or one unknown to the recipient. (This is somewhat less valid now, says the US Postal Inspection Service. Some bombers are

Please see **Bomb** on page 18.

1995 Summer Short Courses

Academic Computing Services
University of North Texas
Computing Center

- ❑ **Registration** — Academic Computing Services is offering the following short courses for the 1995 summer semesters. Please preregister to attend. You may either fill out the form attached to this document or register on-line via Gopher. If registering via Gopher, the form can be found in the path: UNT Departments, Schools, and Colleges/Computing Center/Short Courses. (Call 565-2324 if you have questions about Gopher.)
- ❑ **Eligibility and Class Size** — Faculty and students have first priority to register for these classes. A maximum of 10 people will be admitted to each of the courses held in ISB 110. A maximum of 20 people will be admitted to each of the courses held in Chilton 255, ISB 201 and ISB 203. *Academic Computing Services reserves the right to cancel any course that has 5 or fewer people registered 3 days before the course is scheduled.*
- ❑ **Hands-on Classes** — All persons registering for hands-on (ISB 110, Chilton 255, ISB 203) HDS and/or UNIX courses should have current User-IDs for the system to which the course applies. Applications for User-IDs are available in the Computing Center main office (ISB 119). It takes several working days for a User-ID to be activated.

HDS, VAX, and UNIX Courses

- ① **Introduction to CMS** — CMS is an interactive operating system employed by academic users to access the Academic HDS/8083 IBM-compatible mainframe computer at UNT. CMS users have access to a variety of programming languages, a sophisticated text editing system, and several statistical analysis packages. CMS users can also submit batch jobs to the OS/MVS system. **You must have a current CMS User-ID to take this class.**

A two-hour session, to be held in the SLIS Computer Classroom (ISB 203):

Date	Time	Instructor
Monday, June 12	2-4 p.m.	James Yarbrough

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- ② **Introduction to UNIX on Jove and Sol** – This course starts with a short discussion of the history and evolution of UNIX, covering both the “Berkeley Software Distribution” and “AT&T System V” variants of UNIX. Topics covered will be the basic necessities for using UNIX and use of some of the various utilities available in UNIX. **You must have a current Sol or Jove User-ID to take this class.**

Two two-hour sessions, held in the Chilton General Access Lab (Chilton 255):

Date	Time	Instructor
Tuesday, June 13	2-4 p.m.	Marc St.-Gil
Monday, July 17	2-4 p.m.	Marc St.-Gil

- ③ **Intermediate UNIX on Sol and Jove** – This course is recommended for individuals who are familiar with UNIX and want to learn more about using it on Sol and Jove. **You must have a current Sol or Jove User-ID to take this class.**

A two-hour session to be held in the SLIS Computer Classroom (ISB 203):

Date	Time	Instructor
Thursday, July 27	2-4 p.m.	Marc St.-Gil

Statistical Package Courses

- ① **Introduction to SAS** – This course is recommended for individuals who plan to incorporate statistical analyses into their research. The basic concepts of the SAS system are covered in this course. **This course or prior knowledge of SAS is a prerequisite for all other SAS courses.**

A two-hour session, held in the Chilton General Access Lab (Chilton 255):

Date	Time	Instructor
Monday, June 19	2-4 p.m.	James Yarbrough

- ② **Introduction to SAS for CMS, DOS & UNIX** – This course is recommended for individuals who plan to use SAS on the academic HDS IBM-compatible mainframe, DOS or Sol. Topics covered include creating SAS programs, reading data into SAS programs, saving SAS data sets, importing/exporting SAS data sets to and from other SAS systems, and preparing and submitting SAS jobs to OS/MVS. SAS is used interactively in this course. **Prior knowledge of the SAS command language or attendance in the Intro. to SAS course is required.**

A two-hour session to be held in the Science Library (ACS General Access Lab, ISB 110):

Date	Time	Instructor
Tuesday, June 20	2-4 p.m.	James Yarbrough

Please see Courses on page 19.

Bomb continued from page 17.

sophisticated enough to use return addresses known to the sender.)

Recommended actions if you suspect a package you have received is a bomb:

- Do not attempt to open the package.
- Minimize handling, and gently place the item on a stable surface.
- Isolate the package.
- Evacuate the immediate area.
- Do not put the package in water. Water can cause an explosion.
- Do not put the item in a confined area, such as a filing cabinet. The explosive may be powerful enough to blast the container apart and produce dangerous shrapnel.
- If possible, open windows to vent explosive gasses and reduce glass shards in case of detonation.
- If you are truly suspicious of any package, do not be afraid of embarrassment that you may be wrong. Call the authorities, especially your local Postal Inspector. The phone number of the Postal Inspection in Charge (Ft. Worth) is: 817-625-3400. ■

Support Services Has a New Home Page

Computing Center Support Services has a handy new home page. To connect directly to their page, go to <http://www-lan.unt.edu/cc1/helpdesk/www/> and find out what the ten most frequently asked questions are. ■

Staff Activities

Transitions

- ❑ **Sean McMains**, Mac Guru and trainer left UNT in April for a job at Motorola in Ft. Worth. **Jason Myre** has been hired in a 3/4-time capacity to fulfill most of Sean's Macintosh support duties.
- ❑ **Lisa Sheehan**, Documentation Services Assistant, resigned in March. **Aaron Price** will continue in that position, working 20 hours a week instead of his original 10.
- ❑ **Joy Aswalap**, a programmer on the UNT/HSC Fiscal Data Systems Team returned to her native Thailand to work in May.
- ❑ **Barbara Borgailo**, a programmer on the UNT/HSC Fiscal Data Systems Team transferred to a position in the office of Financial Aid.

Publications and Presentations

- ❑ **Dr. Panu Sittiwong**, Research and Statistical Support Manager for ACS, conducted a hands-on workshop at the SAS Users Group International 20th Annual Conference. The workshop was called "Spicing Up Your SAS/Graph Output with Annotate Facilities," and was given at the conference site, the Walt Disney World Dolphin Hotel. The conference took place April 2-4.
- ❑ **John Hooper**, Team Leader for the UNT/HSC Payroll/Personnel Data Systems Team and **Luanne Linke**, Programmer Analyst on the Database, Central Programming Support Team gave a presentation on "Integrated Security at the University of North Texas" on May 9 at CAUCUS — a national conference of college and university users of Software AB products. The conference was held May 6-10 in Williamsburg, VA. Part of their presentation appears on page 21 of this issue. ■

Courses continued from page 18.

- ③ **Introduction to SPSS** – This course is recommended for individuals who plan to incorporate statistical analyses into their research and want to use SPSS on the academic HDS IBM-compatible mainframe. It emphasizes using SPSS from the CMS operating system. Topics covered include creating SPSS programs, reading data into SPSS programs, saving SPSS data sets on a minidisk, importing/exporting SPSS data sets to and from other SPSS systems, and preparing and submitting SPSS jobs to OS/MVS. SPSS is used interactively in this course. **You must have a current CMS User-ID to take this class.**

A three-hour session to be held in the Chilton General Access Lab (Chilton 255):

Date	Time	Instructor
Wednesday, June 21	1-4 p.m.	James Yarbrough

- ④ **Introduction to SPSS on Windows** – This course is recommended for individuals who plan to use SPSS on a PC using MS Windows.

A two-hour session, held in the Chilton General Access Lab (Chilton 255):

Date	Time	Instructor
Monday, June 26	2-4 p.m.	James Yarbrough

- ⑤ **Introduction to SPSS PC +** — This course covers the basics of using SPSS PC +, Version 4.0.1, for IBM and compatible PCs. Topics covered include using the menu and help interfaces in REVIEW, loading files, selecting variables and running statistical analyses. Emphasis will be placed on building files for execution interactively.

A two-hour session, held in the Chilton General Access Lab (Chilton 255):

Date	Time	Instructor
Tuesday, June 27	2-4 p.m.	James Yarbrough

- ⑥ **Introduction to SAS on Windows, OS/2, and X Window** – This course is recommended for individuals who plan to use SAS on a GUI interface. Topics covered include creating SAS programs, reading data into SAS programs, saving SAS data sets, and importing/exporting SAS data sets to and from other SAS systems. This class will also utilize the SAS menus under the MS Windows System. **Prior knowledge of the SAS command language or attendance in the Intro. to SAS course is required.**

A two-hour sessions to be held in the Chilton General Access Lab (Chilton 255):

Date	Time	Instructor
Thursday, June 29	2-4 p.m.	James Yarbrough

General Information

Wide Area Network & Information Systems Courses

- ❶ **Introduction to Internet Services: Gopher, World Wide Web, USENET News and Others** - This course covers the use of various campus and Internet-wide browsing tools including Gopher, the World Wide Web and USENET News. It is recommended for people who want more information about using the Internet. Emphasis is on searching for information, proper use of various Internet tools, and tips on making your own information available to others on the Internet. **This class will not concentrate on specific clients as much as concepts. The "Introduction to Internet Tools and Techniques" courses are recommended for specific computing platform information.**

Two two-hour sessions held in ISB 201, an SLIS classroom:

Date	Time	Instructor
Friday, June 9	2-4 p.m.	Doug Bateman
Friday, July 21	2-4 p.m.	Doug Bateman

- ❷ **Introduction to Internet Tools and Techniques on the Mac** - This course covers Internet tools and techniques that are unique to the Macintosh environment. **Prior experience using a Macintosh is required.**

A two-hour session, held in the SLIS Computer Classroom (ISB 203):

Date	Time	Instructor
Thursday, July 13	2-4 p.m.	Eriq Neale

- ❸ **Introduction to Internet Tools and Techniques on MS Windows** - This course covers Internet tools and techniques as they are used in the MS Windows. **Prior experience using MS Windows is required.**

A two-hour session, held in the SLIS Computer Classroom (ISB 203):

Date	Time	Instructor
Thursday, June 15	2-4 p.m.	Doug Bateman

- ❹ **Creating Your Home Page: Basic HTML Workshop** - This course covers the use of HTML (a formatting language) to produce text that can be read by various World Wide Web (WWW) clients on the Internet. Familiarity with WWW concepts recommended. **Bring an empty, DOS-formatted 3.5" diskette with you to save your in-class work to.**

Two three-hour sessions held in the Chilton General Access Lab (Chilton 255):

Date	Time	Instructor
Thursday, June 22	2-5 p.m.	Doug Bateman
Wednesday, July 26	2-5 p.m.	Doug Bateman

Please see **Courses** on page 21.

Don't Ditch that Software!

By Claudia Lynch, *Benchmarks* Editor
(lynch@unt.edu)

In the March/April issue of *Benchmarks* (Vol. 16, No. 2), the article on "Software Piracy" on page 8 states that you should destroy old copies of software. It has come to my attention that State employees have no right to destroy any software that was purchased with State funds. The proper thing to do is to send old software and manuals to the Property and Inventory office. ■

VAX Phase-out Almost Complete

By Claudia Lynch, *Benchmarks* Editor
(lynch@unt.edu)

We've been telling you for quite some time now that the VAX is going away. As of **June 30, 1995**, vax@acs.unt.edu, will be no more. A letter was sent out last semester to all VAX users with instructions for things they needed to do to migrate off of the VAX to Jove. As stated in the letter, the reason for the shutdown of the VAX is that "UNIX-based Jove can accomplish everything the VAX can do plus lots more at far less operating cost." No accounts for the VAX system have been granted since January, 1995.

If you are a VAX user and didn't receive a letter, or have questions about the letter, you can contact the UNIX/VAX Operations team for more information. The team consists of Marc St.-Gil (mstgil@unt.edu), Amos Gouaux (amos@unt.edu), and Shyam Katru (skatru@unt.edu). They can be reached at 565-4161 or 565-2324. ■

General Information

ISEC

Integrated Security at the University of North Texas

By John Hooper, Team Leader, UNT/HSC Payroll/Personnel Data Systems Team (hooper@ccl.unt.edu) and Luanne Linke, Programmer Analyst, Database, Central Programming Support Team (linke@ccl.unt.edu)

Introduction

Traditionally most computer resource security for administrative computing at UNT has been provided and administered at the application level. The demands for more comprehensive security are increasing. These demands arise from state audits of the information systems function, from security mandates of the state's Department of Information Resources, and from more sophisticated security expectations of end users such as security by value. IBM's RACF was installed to help satisfy some of these requirements. Rather than lay it on top of numerous application security approaches, the university decided to develop an integrated security administration approach, ISEC. This would integrate the administration of all levels of security - logon, application access, application function, program access, database/dataset access, and security by value. This article will discuss how the different levels of security will be implemented and integrated.

Demands for security

There are four major sources of demands for increased information systems security at UNT. First, external audits identified deficiencies in security procedures. These audits highlighted resource security problems (i.e., production data and programs). Second, the State of Texas Department of Information Resources defined the roles and responsibilities of state agen-

Please see ISEC on page 22.

Courses continued from page 20.

- ⑥ **Introduction to Internet Tools and Techniques on UNIX** - The Internet is a collection of related computer networks that link almost a million computers throughout the world. This course will cover file transfer, remote login, use of on-line library catalogs at other universities, Archie, Gopher, and many other Internet topics **except** electronic mail and USENET News. **Prior knowledge of UNIX is required:**

A one and one half-hour session held in the Chilton General Access Lab (Chilton 255):

Date	Time	Instructor
Friday, June 23	2:30-4 p.m.	Marc St.-Gil

- ⑦ **Introduction to Electronic Mail and News on UNIX** - This course will cover the basics of using elm or pine to send and receive electronic mail on the Internet. The use of electronic mailing lists, including LISTSERV will be discussed. Using USENET newsgroups via the nn News program on UNIX will also be explored. **Prior knowledge of UNIX is required.**

A two-hour session, to be held in the Chilton General Access Lab (Chilton 255):

Date	Time	Instructor
Wednesday, June 28	2-4 p.m.	Marc St.-Gil

- ⑧ **Introduction to Electronic Mail Lists** - This course will cover the basic concepts behind electronic mailing lists. Various lists will be described with instructions on how to subscribe to them.

A one-hour session, to be held in ISB 201, an SLIS classroom:

Date	Time	Instructor
Friday, June 30	2-3 p.m.	Philip Baczewski

Microcomputer Courses: General

- ① **Introduction to Windows 3.1** - This course provides an introduction to the Windows 3.1 operating environment. Emphasis will be placed on using the mouse, control panel, and file manager.

Three three-hour sessions, held in the SLIS Computer Classroom (ISB 203):

Date	Time	Instructor
Tuesday, June 6	2-5 p.m.	Sandy Burke
Wednesday, July 5	2-5 p.m.	Sandy Burke
Tuesday, August 1	2-5 p.m.	Sandy Burke

General Information

- ② **Don't Get Stoned: Computer Viruses and You** - This course is recommended for anyone who uses a microcomputer and wants to protect their software and data against viral infections.

A two-hour session, held in ISB 201, an SLIS classroom:

Date	Time	Instructor
Friday, June 16	2-4 p.m.	Eriq Neale

- ③ **Current Computer Security Issues at UNT** - This course is recommended for anyone who is responsible for the security of microcomputers at UNT, particularly File Server Managers, Computer Lab Managers and employees. Recent virus outbreaks will be discussed as well as other security issues.

A one-hour session, held in ISB 201, an SLIS classroom:

Date	Time	Instructor
Friday, June 30	3:30-4:30 p.m.	Eriq Neale

Microcomputer Courses: WordPerfect

- ① **Transition from WordPerfect 5.1 to 6.1(Windows)** - This course is for those individuals familiar with WP51., and who are transitioning to WP 6.1 Windows. Time will be spent on using the Windows version, going through the menu alternatives.

Three three-hour sessions, held in the SLIS Computer Classroom (ISB 203):

Date	Time	Instructor
Thursday, June 8	2-5 p.m.	Sandy Burke
Thursday, July 6	2-5 p.m.	Sandy Burke
Thursday, August 3	2-5 p.m.	Sandy Burke

- ② **Advanced WordPerfect for Windows: Tables, Math** - This course will cover creating tables, manipulating tables, making a table from a spreadsheet file, and using the math features within tables. **Prior knowledge of WordPerfect 6.1 for Windows basic commands required.**

Three three-hour sessions, held in the SLIS Computer Classroom (ISB 203):

Date	Time	Instructor
Tuesday, June 13	2-5 p.m.	Sandy Burke
Tuesday, July 18	2-5 p.m.	Sandy Burke
Tuesday, August 8	2-5 p.m.	Sandy Burke

Please see Courses on page 23.

ISEC continued from page 21.

cies for the safeguarding of university information resources. Third, UNT internal auditors have helped identify potential problems. Finally, as online and universal access to mainframe computing resources increased, the user community demanded a more comprehensive, maintainable, and flexible security approach.

ISEC project team

All of these demands caused a flurry of activity beginning in 1993. In 1993 the Fiscal Systems team had developed part of a security system, FISEC, to be their application security system. In early 1994 the Payroll Personnel Data Systems team (PPDS) was beginning an effort to add security by value, dynamic menu support, and authorization by group to UNT's Human Resource Management Information System (HRMIS). The two teams reviewed FISEC and decided that with further modifications (most of which were already on the drawing board) it could meet the needs of both groups. In late 1993 the Database and Central Programming Support team (DBCPS), which had responsibility for the implementation of RACF security, began a push to complete the implementation of baseline resource security (databases, datasets, program libraries, etc.). After meeting with the payroll team to discuss the implementation of RACF security for HRMIS, both teams realized some benefits could be gained by coordinating their efforts. Further, they realized that FISEC not only provided a model for security for HRMIS but could also provide a repository for security for all of administrative computing. This security repository and its associated utilities were named ISEC (Integrated SECURITY). The ISEC project was born.

Most of 1994 was spent seeking input from the user community and the other

Please see ISEC on page 25.

General Information

- ⑥ **Advanced WordPerfect for Windows: Merge** - This course will cover creating a form letter and a list of individuals to send it to. It will also cover the use of the envelope feature. **Prior Knowledge of WordPerfect 6.1 for Windows basic commands required.**

Two three-hour sessions, held in the SLIS Computer Classroom (ISB 203):

Date	Time	Instructor
Wednesday, June 14	2-5 p.m.	Sandy Burke
Tuesday, July 11	2-5 p.m.	Sandy Burke



Information Resources Council News

Minutes provided by Sue Ellen Richey, Recording Secretary

IRC Regular Voting Members: Ray von Dran, Library and Information Sciences (Chair); Cengiz Capan, College of Business; Carolyn Cunningham, Student Affairs; Paul Dworak, College of Music; Brian Forsman, UNTHSC Information Resources Council; Chuck Fuller, Fiscal Affairs; Larry Gleeson, School of Visual Arts; Don Grose, Libraries; David Hartman, School of Community Services and School of Merchandising and Hospitality Management; Sam Magill, UNTHSC Director of Information Technology Services; Steve Miller, Administrative Affairs; Tom Newell, Telecommunications (Ex-officio); Don Palermo, Academic Administration; Jean Schaake, College of Arts and Sciences; Paul Schlieve, College of Education; Ronald Sutcliffe, Graduate Student Council; John Todd, Faculty Senate; Virginia Wheelless, Associate Vice President and Director, University Planning and Institutional Research; Steve Williams, Undergraduate Student Association. **IRC Ex-officio Nonvoting Members:** Bill Buntain, Computing Center; Jim Curry, Microcomputer Maintenance Shop; Paul Gandel, Computing Center; Richard Harris, Computing Center; Coy Hoggard, Computing Center.

March 30, 1995

Mainframe Upgrade Discussed

Richard Harris introduced the subject of a Mainframe Upgrade for discussion, explaining that Academic Computing and Administrative Computing folks have been looking into the alternatives and possibilities to address the aging of the academic mainframe and the potential overload of the administrative mainframe. He distributed a document which was prepared as a joint proposal by Academic and Administrative Computing, explaining that if the proposal is approved this document will have to be supplemented to present to the Department of Information Resources. The Board of Regents would also have to approve an upgrade. He pointed out that one of the side benefits of such an upgrade move would be to roll some of the expenses normally paid out of the Computing Center's operating budget into a warranty situation so that they could be paid out of the Prop II budget.

Coy Hoggard then made a presentation to the Council, explaining that the administrative mainframe is experiencing workload problems and the academic mainframe

problems stem from an aging technology, in that the operating system is no longer supported, nor can it be upgraded; therefore, some of the software running on that machine cannot be brought up to the current versions. The academic machine will either have to be upgraded in the near future, or some of the applications on it won't be supported.

The first alternative presented was to maintain the status quo, which would be very problematic for both the academic and the administrative side. The costs were lined out for this and the other alternatives in a comparison table. The other alternatives presented were:

- ① purchase of a new 58 MIP machine, the price of which would be combined with software and equipment maintenance under an IBM ESO Entry Server Option giving UNT the opportunity to upgrade that machine to an 82 MIP machine anytime within the first 3 years after purchase. At the time of the second upgrade, another 3-year warranty and service period would begin. Coy noted that this alternative is the preferred one and would result in the greatest savings to the Computing Center's M&O budget.
- ② The next option would be to purchase the 58 mip machine with the 3-year warranty and software inclusion, but no option would be exercised to upgrade at the end of the 3 years.
- ③ The next option would be to upgrade just the academic mainframe.

It was suggested that this opportunity be taken to establish a process for looking at the issue of whether or not UNT computing is done on the most appropriate platforms.

The Chair asked that the proposal be updated, with input to be provided by IRC members, and presented to the IRC for a vote at the April meeting.

GroupWise Progress Report

Bill Buntain distributed a GroupWise Implementation Progress Report which contained a project plan schedule, a diagram showing the e-mail architecture, and a system administrator policy recommendation. He explained that the original time schedule set up by the Electronic Communication Commission is not attainable, for many reasons, which are detailed in the progress report.

Bill reported that a couple of advisory groups have been set up; one for coordination of training on campus, and one to address administrative policy issues. Discussion followed. Bill asked that questions and comments regarding the GroupWise Implementation be sent to him by e-mail. The Chair asked Bill to bring a follow-up report to the April IRC meeting.

Dial-in Access Proposal

Bill Buntain presented the Dial-in Access proposal for a vote by the Council, the proposal having been presented to the IRC at its February meeting. He explained that his group has been working for several years to develop viable solutions for UNT's dial-up facilities, because the current set-up is not adequate. There are now solutions available, but the problem is how to fund those solutions. The proposal is to freeze the current, free dial-up facilities in terms of capacity, number of lines, and services and then set up a charge-back system, that would be self-funding, for a set number of lines that would provide an optional premium service, which would guarantee a maximum user-to-line ratio of 7:1.

Discussion followed during which Bill explained that other universities use charge-back systems to pay for these services, and some have gone with commercial providers. Bill believes that UNT can provide a less costly service than commercial providers. He urged that the IRC approve the principle of establishing this solution as proposed, since there is an urgent need for

action. It was explained that this proposal would use off-campus lines and would not compromise the campus telecommunications system.

The proposal was approved by the council after agreeing to amendments which would freeze the current free dialup access, in terms of the number of lines and enable the full suite of available protocol on those lines; and allow for a charge-back arrangement to be established to recover only the operating costs.

April 18, 1995

Mainframe Upgrade Proposal

Coy Hoggard presented the updated Mainframe Upgrade proposal, explaining that he had added more explanation and had changed the recommendation a bit since the last IRC meeting. He suggested that IBM's ESO agreement be entered into, which would provide the opportunity to use the new machine in a shared environment and then evaluate the situation after 12 months to see if a bigger machine is needed; if it is not needed, then the situation could be re-evaluated in 18 months. Coy's recommendation would mean purchasing a 58 MIP machine now and would include the option of a second upgrade to an 83 MIP machine after 12 to 24 months under the ESO agreement. By doing this, there would be a financial benefit of paying for the equipment, maintenance and some software upgrades out of Prop II funds for five years. He detailed the financials of each alternative as well as how he had arrived at what funds would be Prop II eligible and which would have to come out of M&O.

Discussion followed during which Coy explained that up to now administrative computing has been operating successfully out in the mainframe environment, while looking at non-mainframe solutions. Some of the non-mainframe solutions look very good but will probably not be available for 24 to 36

months. He doesn't believe the transition from mainframe to client-server applications could be done overnight, but would have to be done gradually. He believes that a 3-year commitment to the continued use of the mainframe is a wise decision.

Paul Schlieve proposed that Alternative B4 of Coy's proposal (Alternative B4 provides for the purchase of a 58 MIP machine, with no planned upgrade) be accepted, leaving open the option to go with Alternative B1 (provides for an upgrade after 12 months), B2 (provides for an upgrade after 18 months) or B3 (provides for an upgrade after 24 months) later if necessary; and added the stipulation that a written plan be prepared for meeting the needs of academic researchers as well as a comprehensive review of all of the administrative, research and other curricular applications that are running on the full compliment of central host computer systems within six months, at which time a proposed plan of action would be brought to the IRC, to include a second mainframe upgrade, staffing increases, or whatever is needed to take care of everyone's needs.

Virginia Wheelless suggested that the Instruction Program Group, the Research Program Group and the Administrative Program Group be charged to take on the review and reporting project outlined by Schlieve. She seconded approval of Coy's proposal with the stipulations Schlieve added, and deleting the six-month time table.

Two additional amendments to Schlieve's motion were agreed upon:

- ① that a comprehensive review of computing needs will be done and the report will present a series of recommendations with estimated costs; and
- ② a report, prepared by the Research Program Group, of a short-term study of academic researchers' needs will be presented to the IRC at its May meeting.

Richard Harris stated that there is an existing mechanism for laying out

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what people want to do, and it is the Strategic Plan. UNT's existing computing platforms and administrative applications are documented in the back of the Plan. He encouraged IRC members to consider the Strategic Plan as something that can be updated as often as needed. He urged the Research Program Group to make its recommendations in the form of a proposal that can be considered for inclusion in the Strategic Plan. He also suggested that instructional and research applications and platforms be added to the plan as part of the review process.

The motion was passed by a vote of 18 for and 1 against, to go forward with Alternative B4, to defer any further upgrades until after a Research Program Group report next month and a long-term study is done by the 3 program groups and further recommendations are made. A time line for the long-term review will be set at the next IRC meeting. ■

ISEC continued from page 22.

application groups. Many of the goals for ISEC were identified and confirmed during this process. By the end of 1994 the requirements had been identified and the underlying data model along with general design had been completed. Early in 1995 programming began in earnest. Although FISEC provided the starting model and inspiration, the decision was made to develop ISEC as a new application because of the many additions to the model generated by discussions with the users and other project teams.

Although the ISEC system will ultimately be the responsibility of the DBCPS team, its development is a joint venture among several project teams. The Fiscal team provided the original FISEC system as a model. The PPDS and DBCPS teams have provided the manpower necessary to design and program ISEC. The other application teams in administrative computing provided information about

how the evolving ISEC model could be integrated with their applications.

Goals for security

Based on the demands discussed earlier and the discussions with affected groups during 1994, the following goals were identified.

- ① First, the implementation must satisfy the audit requirements as well as those of the state's Department of Information Resources.
- ② Second, it should be easily administered.
- ③ Third, the administration should be distributed to the owners of the resources (applications, data, etc.).
- ④ Fourth, it should provide a framework for security features that are unsupported by RACF including security by value and dynamic menuing.
- ⑤ Finally, a framework should be developed that could conceptually support security on other platforms.

Scope of security

Six layers of security were identified as necessary to meet the demands for security at UNT. Proceeding from gross to fine granularity these layers are teleprocessing monitor (COM-LETE) access, application access, application function security, program library access, database/dataset access, and security by value. Teleprocessing monitor access protects the system by requiring a User-ID and password. The remaining five layers provide further control based on the User-ID or information associated with the User-ID. The first of these layers is application access. It controls what COM-LETE transactions a user may run. These COM-LETE transactions start application systems such as the student system, SIMS, or the human resources system, HRMIS. The application function layer limits access to authorized functions within the application. Program library access control limits access to program libraries which are required to run applications. The database/dataset security layer controls what data can be accessed and can sometimes specify the program and program library through which that access can be obtained. The most granular layer is security by value where access to particular data items is dependent on characteristics of the data and the relationship of the user to that data.

Current implementation of security at UNT

Currently administrative computing resource security at UNT is administered and implemented in a fragmented manner. The following table shows how each of these layers is currently implemented:

SECURITY Layer

VTAM application access

Application access
Application function security

Dataset access
(PDS's including program libraries,
VSAM, sequential files)
Database access (NATURAL
program libraries, databases)
Security by value

HOW IMPLEMENTED

COM-LETE User-ID system
NTSEC (local routine) RACF
NTSEC
8 application specific
implementations
RACF (minimal)

NATURAL LOGON
SECURITY (minimal)
3 application specific implementations

There are five major concerns about this implementation.

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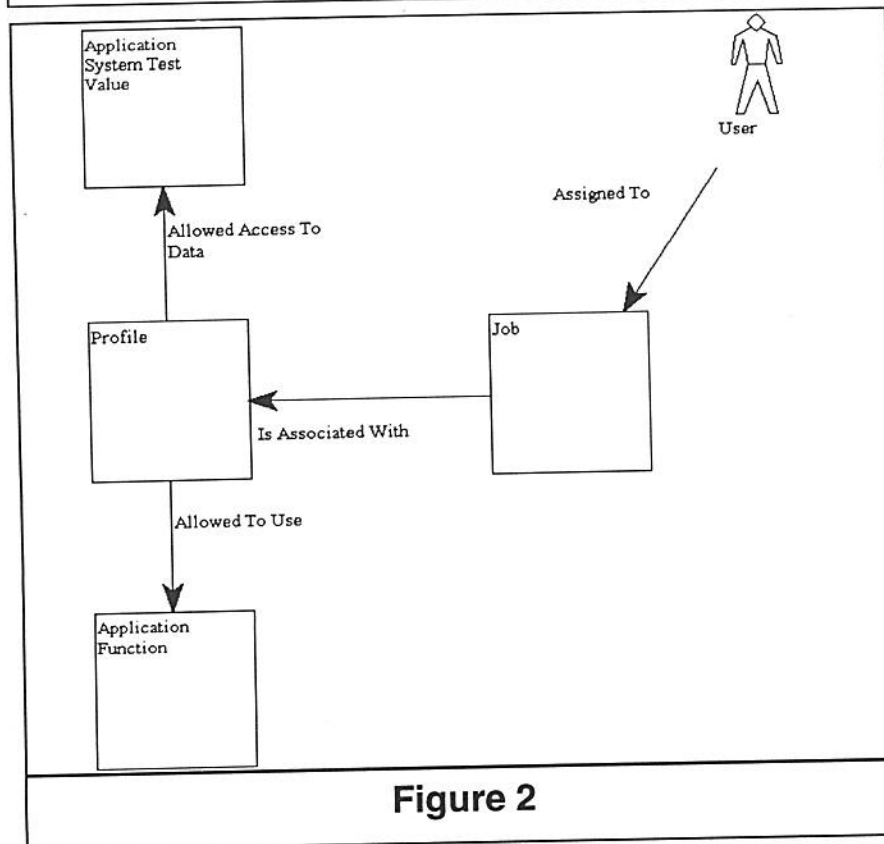
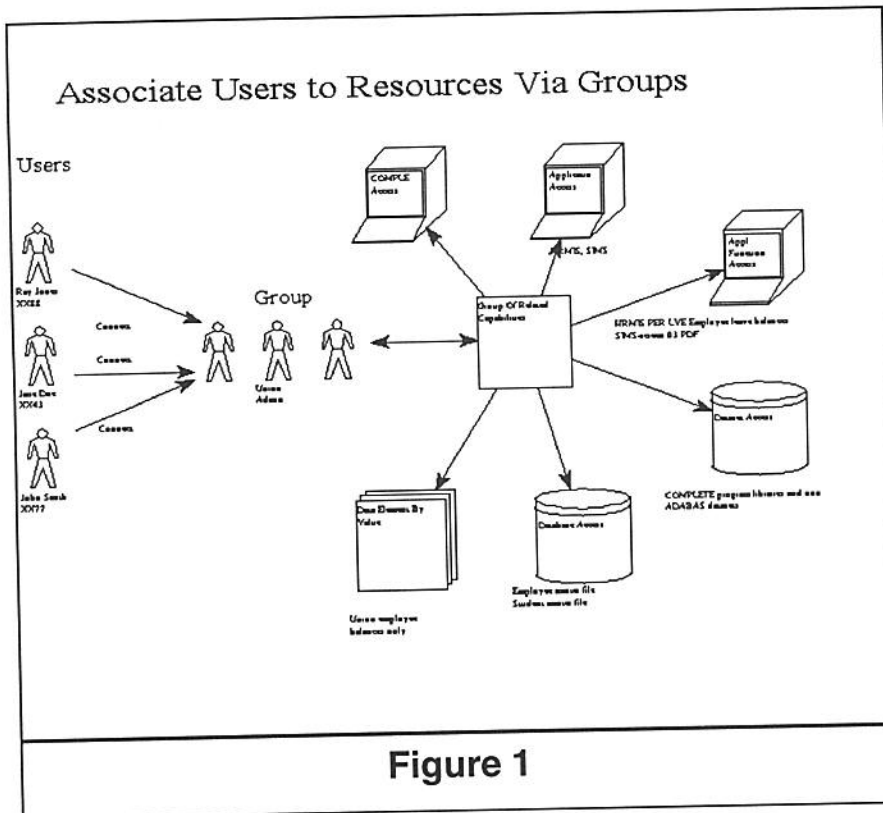
- ❶ First, as addressed in the state audit, security is lacking on some important resources.
- ❷ Second, with projected applications, the university is moving toward as many as 15 variations of application security and security by value. Although this approach has generally met the needs of particular applications well, administration is complex.
- ❸ Third, the existing layers of security are administered by eight different groups in 11 different systems. Setting up a new employee could involve up to 14 different people.
- ❹ Fourth, the addition of more robust RACF security which must be coordinated with the existing security structures will further complicate matters. For example, the underlying database and program library security must be coordinated with the application function security before a user can use an application.
- ❺ Finally, a good deal of this security is maintained at the User-ID level. Thus when a new employee is added a great deal of effort takes place to determine and establish their capabilities throughout the system.

Directives for security

In order to overcome the weaknesses of the current approach and meet the goals for security, the following directives were adopted:

- ❑ Implementation of security should be transparent — Only the security administrators should do anything different after security is implemented. Application users should not do anything differently after ISEC is implemented.
- ❑ Establish/formalize security roles and responsibilities — Computer resource security at UNT is everyone's responsibility. The roles must be defined and responsibility assigned for all components of security.
- ❑ Provide consolidated security database — There must be a central repository that controls and documents access to computing resources across applications. Fragmented implementation is too cumbersome and adds risk.
- ❑ Enable distributed security administration — Although the security database is consolidated, the administration should be distributed. For example, a supervisor should be able to connect a new user to everything that user needs to do their job. An application owner should be able to grant access to application functions that a particular job needs. These should both be possible without involving other groups or employees.
- ❑ Provide a common security administration tool — The same security administration tool should be used to administer security across applications.
- ❑ Allow association of users into groups — Users who require identical capabilities will be identified as groups and permissions will be granted to the groups. This will eliminate assignment of functionality by User-ID.
- ❑ Allow association of capabilities into groups — Application functions can be grouped together so that they can be granted as a whole. For example, all application functions and capabilities required to do inquiry in the student system might be grouped. Figure 1 illustrates how groups of capabilities are grouped and assigned to a group of users to which a particular user belongs.
- ❑ Provide a repository for multiplatform security — Although the actual security implementation will vary by platform, a repository that would support the representation of security access rules for all platforms should be provided.
- ❑ Establish resource security — Baseline protection for computing resources should be provided. Access rules should be defined for all production program libraries, datasets, and databases.
- ❑ Integrate application and resource security (RACF) — Baseline resource protection will be provided through IBM's RACF. These RACF rules must be coordinated with application security. Granting of functionality within applications should also cause the corresponding permissions within the RACF product to be granted.
- Provide a framework for security by value — Traditionally the users of mainframe applications at UNT have been from central, support organizations such as the registrar, payroll, or the controller's office. As the applications at UNT are made available to other users such as those from the academic departments, access could be restricted based on the data itself. For example, a faculty member could only view the student records for students in their major.
- Provide a basis for menu presentation — Traditionally UNT systems have presented the user with all options in an application. As applications are opened to more employees and the applications became more complex, there is a need to support the presentation of menus based on the authorization granted the user. The presentation of the menus should be driven by the transactions to which the user is authorized.
- Provide inquiry capabilities for nontechnical users — Since administration of the system will be distributed to end users, the security approach should allow users to browse the security repository and RACF to view security arrangements from different starting points (application, user, etc.).
- Insure the completion of other external requirements before granting access — there is a desire to grant an employee access to some function but to deny them use of that function until some external re-

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quirement, such as training, is satisfied.

Application model

There are five logical entities required to represent the application side of security in the ISEC model. These entities and the relationships between them determine the capabilities a particular user has in the system. These entities are:

- ① **System test values** — These are specific values used by a particular system test (security by value routine). These values can be associated with a profile and are used to determine which values are available for that profile.
- ② **Application function** — This is a particular capability available within a system. As will be seen later it is identified by the environment, system, subsystem, transaction and function which invokes it.
- ③ **Profile** — This is a logical collection of application functions or data values that can be granted together. For example, all actions and data values required to perform general inquiry against the student system could be placed in one profile. The content of a profile is determined by the requirements of an application.
- ④ **Job** — This is representative of a particular role at the university. Although some users may share jobs, it is assumed there could be nearly as many jobs as there are employees of the university due to the unique requirements of each role. Job does not equate to position since many employees with identical positions (administrative assistant) have different responsibilities.
- ⑤ **User** — This user identifies an individual via a User-ID that is permitted access to administrative computing facilities.

The power of these entities is in the relationships between them. Figure 2 illustrates those relationships.

Please notice that all of these relationships are many to many. Although the

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user has a default job, they can be associated with other jobs. This might be the case when the user works half time in each of two departments. The job can be attached to one or more profiles depending on the capabilities required to perform that role at the university. Obviously a profile can be granted to multiple jobs. A profile can be granted access to many application functions or system test values. Conversely the system test values and application functions could be connected to many different profiles.

The benefits of this structure are many. When a new employee is hired to replace an old employee, they merely need to be connected to the appropriate job to be granted all the capabilities they need across the entire system. Likewise, when they leave or are reassigned, disconnecting them from the job removes all their access in the system. Similarly, if a logical collection of application functions (such as student system inquiry) is to be granted to a job, connection of that profile to that job automatically makes those application functions available to the users connected to that job. In the past those connections had to be made on a function by function, user by user basis. Finally, a new application function can be granted to appropriate users by attaching it to the appropriate profile(s). Integration of these activities with RACF connections, which will be discussed later, makes administering security relatively painless once the entities and relationships have been defined.

Roles and responsibilities

Before discussing the physical implementation of security, the roles for security must be defined. The major roles involved in security are security administrator, application/data owner, security administration committee, hiring authority, application program development team, and user.

- The security administrator is responsible for providing security and risk management related services.

At UNT this role has been assigned to the Database and Central Programming Support Team. Some examples of their duties in this capacity are to assist in the acquisition and development of software to meet the university's security needs, assist in the risk analysis process, assist in identifying vulnerabilities and appropriate solutions, and develop and maintain the access control rules to provide controlled access in accordance with the owner defined access requirements.

- The data owner is responsible for assessing the value of a resource, determining the level of security required to protect the resources under their control, for granting access to those assets, assigning custody of the resource, and ensuring compliance. This role has been assigned to appropriate members of the university community. The resources and access permission levels are determined by the data owner with the assistance of the security administrator and the application programming team. They decide what resources exist in their application, what level of risk must be addressed, and which resources need to be protected. They assist in determining the RACF rules required to protect the resources at the appropriate permission level and what groups need to be permitted access to the protected resources.
- The application owner is a special type of data owner responsible for application functions and program access. This is often the same group of people as the data owners. If it is desirable to separate the administration of application access from the administration of data access, these two groups may be different.
- The security administration committee is required to provide guidance on the implementation of security and to make decisions on implementation issues affecting more than one group. This is a working group consisting of security admin-

istrators, application/data owners and application program development teams. They work together to assist the owners in identifying resources, accessing value, identifying risks, and coordinating security needs and implementation.

- The hiring authority (job owner) is responsible for connecting users to a job. They are responsible for defining jobs and requesting the data owner give the job the appropriate profiles that contain the functions and security required to perform the job. The job owner and data owner must take care to define jobs with sufficient granularity to avoid creating a security risk.
- The application development team acts as a resource for the application/data owners. They implement the levels of security (application function and security by value) within their applications defined by the application/data owners.
- Finally, the user of the data is responsible for using the resources appropriately.

Resource security

IBM's Resource Access Control Facility (RACF) is the primary repository for resource security rules at the University of North Texas.

Treehouse's SECURITRE product provides an interface to perform Security Access Facility (SAF) calls for our ADABAS Database, ADABAS utilities, and Natural program libraries.

ISEC serves as the repository for application-based security. It also serves as an administrative tool to coordinate the assignment of JOB and ACCESS-GROUPS to the USER.

ISEC/RACF relationship and interface

Without the use of an ISEC/RACF interface, the security administrators and the data owners would manually maintain the connections between the users and the various RACF groups. They would need to keep the assignment of

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permissions in step with the users changing job function needs.

The ISEC/RACF interface was designed to ease the maintenance of the RACF database by automating some of the administrative duties like connecting users to groups. The connection requirements are determined from a list of all the access groups required by the transactions a job has been granted. Figure 3 illustrates the RACF the integration between ISEC and RACF as well as the responsibilities for maintenance of the model.

Various actions from ISEC write requests to the RACF-REQUEST file. On a scheduled basis a job is run to read the pending requests and issue the RACF commands to the TSO RACF command processor. Results are collected, the RACF-REQUEST records are updated with completion data, and their statuses changed to complete.

ISEC implementation of security

As previously discussed, there are several layers of security required to accomplish the overall protection of the university's data resources. The following discusses the current implementation of the layers at the completion of the ISEC project.

SECURITY Layer

VTAM application access
Application access
Application function security
Dataset access
(PDS's including program libraries,
VSAM, sequential files)
Database access (NATURAL
Program libraries, databases)
Security by value

HOW IMPLEMENTED

COM-LETE Applid logon RACF
COM-LETE user exit RACF
ISEC function validation utility
RACF

SECURITRE

RACF
ISEC system test utility

ISEC and RACF Relationship (Logical) Including Responsibilities

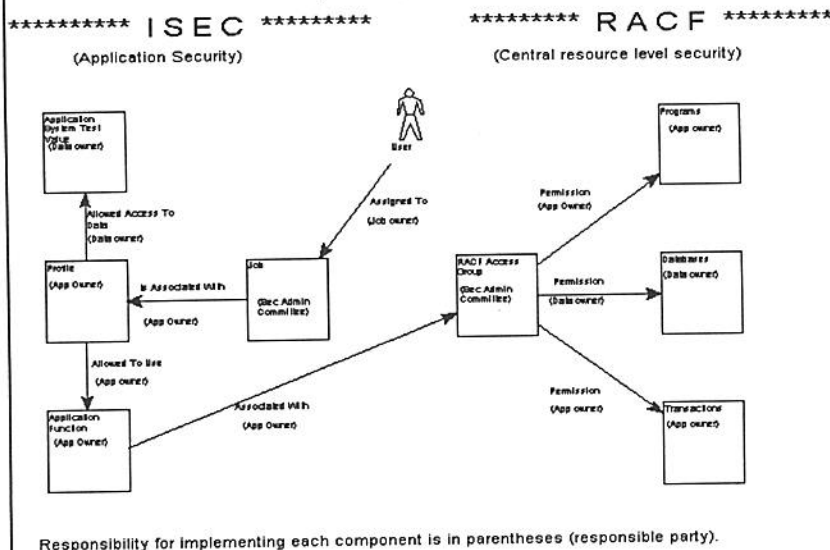


Figure 3

① First, the Applid logon and password processing protects the initial entry to our systems. A VTAM application, such as COM-LETE, establishes the security environment (ACEE) and does a Security Access Facility (SAF) call to RACF to see if the user is authorized to logon. This is administered by the assignment of a User-ID and password to each person who is given access to the system. The User-ID is requested through UNT's User-ID system by job owner (unit manager/supervisor) of the position that the user holds. The User-ID system will request that the new User-ID be added to the RACF database VIA a ISEC/RACF interface. The job owner will also assign the User-ID to a JOB thus granting the user all the transactions, menus, system test values and access groups associated with that JOB.

② Second, the application access layer checks that the user is authorized to perform or execute a program. Our online Teleprocessing Monitor (COM-LETE) accesses RACF via COM-LETE's user exit, ULSRPSFS, to check the user is authorized to execute the program.

Authorization is granted by connecting a user to an Access Group that has been permitted access to the program being requested. Each FUNCTION has a RACF Access Group associated with it. The Access Group contains the permissions to the various resources required to perform that FUNCTION. The access groups a user is connected to are based on the access groups listed in the JOB-TRANS record of the JOB.

③ Third, application function security depends on the application to use ISEC for function validation. The function validation utility and other implementation options are discussed in the Application Implementation section below.

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- ④ Fourth, the operating system automatically makes Security Access Facility calls. For sequential datasets, PDS, VSAM, BDAM, etc., RACF validates the user access rights at various operating system events such as OPEN, WRITE, DELETE, etc.
- ⑤ Fifth, the database system automatically calls the Security Access Facility. SECURITRE calls SAF to check access rights for database utilities, database access, and NATURAL library access.
- ⑥ Sixth, the implementation of security by value also depends on the application to use ISEC for value checking. The system test utility and other implementation options are discussed in the Application Implementation section below.

Physical implementation and tuning issues

We have implemented a dedicated database allowing us to tune the ISEC application for maximum performance.

The physical entities of JOB-MENU, JOB-TRANS, and JOB-VALUES were implemented to reduce database calls.

- JOB-TRANS contains a transaction validator key to allow security validation using the index data (ADABAS inverted list) with no I/O to the data portion of the database.
- JOB-MENU is constructed so that a single database call retrieves all the data required to present a menu to the user.
- The JOB-VALUES file is designed so a single database call retrieves all the valid values or value ranges that a user may use for a given system test.
- JOB is placed in the default group of a user and is available from the ACEE with no I/O.

Application implementation

A callable utility, WHO-AM-I, determines the JOB, USER and ENVIRONMENT. This routine is used by the other security implementation routines so they do not rely on the application program to pass user data to the security routines.

The Validation utility is called with the INSTITUTION, SYSTEM, SUBSYSTEM, TRANSACTION, and FUNCTION requested. The utility determines the USER, JOB and ENVIRONMENT with the WHO-AM-I routine. It then uses the transaction validator key to verify the user is authorized to use the application function. For audit purposes, unauthorized access attempts are logged on SMF and displayed to an error log.

The system test utility is called with a testid that identifies the system test and the value the user entered. The utility determines the USER, JOB and ENVIRONMENT with the WHO-AM-I routine. The utility then compares the value entered to the list of valid values for this user and determines if the user is authorized to use this value. There is also an override feature that may require a second person to approve values that are out of range. We use this in our financial applications to validate and approve large values. Another feature of the security by value allows a system test to specify an application written validation or edit module to be invoked. This module may perform any value validation function required. Some examples of this are cross field validation editing, and table look up validation routines.

In addition to the application program calling the ISEC validation routines, some applications have allocated a security matrix table which is dynamically built. If the validation routine returns a positive response, the authorized function or value is saved in the security matrix. When the user requests the same function or value the authorization is found in the authorization matrix, thus saving the ISEC call. This is

a good option for applications systems that have a common area that is passed from program to program.

Another implementation approach is to build a security matrix when the user first enters the application. This incurs the cost of obtaining the ISEC security at logon but saves all other calls to ISEC. The JOB-TRANS records contain a list of FUNCTIONS. This allows an application to extract a list of authorized functions for the JOB with very few I/O requests. This is a good option for applications that use a main driver and a logon or initialization routine.

The menu utility is called with the application SUBSYSTEM menuid. It uses the WHO-AM-I routine to determine the USER and JOB, and with a database call retrieves all the data required to present a menu to the user.

Conclusion

The ISEC system is currently under development. A pilot is planned for early fall for certain applications with full implementation completed by 1996. ■

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	Introduction to Windows 3.1	Tuesday, June 6	2-5 p.m.	ISB 203
	Introduction to Windows 3.1	Wednesday, July 5	2-5 p.m.	ISB 203
	Introduction to Windows 3.1	Tuesday, August 1	2-5 p.m.	ISB 203
	Transition WordPerfect 5.1 to 6.1 for Windows	Thursday, June 8	2-5 p.m.	ISB 203
	Transition WordPerfect 5.1 to 6.1 for Windows	Thursday, July 6	2-5 p.m.	ISB 203
	Transition WordPerfect 5.1 to 6.1 for Windows	Thursday, August 3	2-5 p.m.	ISB 203
	Introduction to Internet Services: Gopher, WWW, News	Friday, June 9	2-4 p.m.	ISB 201
	Introduction to Internet Services: Gopher, WWW, News	Friday, July 21	2-4 p.m.	ISB 201
	Introduction to CMS	Monday, June 12	2-4 p.m.	ISB 203
	Introduction to UNIX on Jove and Sol	Tuesday, June 13	2-4 p.m.	Chilton 255
	Introduction to UNIX on Jove and Sol	Monday, July 17	2-4 p.m.	Chilton 255
	Advanced WordPerfect for Windows: Tables, Math	Tuesday, June 13	2-5 p.m.	ISB 203
	Advanced WordPerfect for Windows: Tables, Math	Tuesday, July 18	2-5 p.m.	ISB 203
	Advanced WordPerfect for Windows: Tables, Math	Tuesday, August 8	2-5 p.m.	ISB 203
	Advanced WordPerfect for Windows: Merge	Wednesday, June 14	2-5 p.m.	ISB 203
	Advanced WordPerfect for Windows: Merge	Tuesday, July 11	2-5 p.m.	ISB 203
	Advanced WordPerfect for Windows: Merge	Thursday, August 10	2-5 p.m.	ISB 203
	Intro. to Internet Tools & Techniques on MS Windows	Thursday, June 15	2-4 p.m.	ISB 203
	Don't Get Stoned: Computer Viruses and You	Friday, June 16	2-4 p.m.	ISB 201
	Introduction to SAS	Monday, June 19	2-4 p.m.	Chilton 255
	Introduction to SAS: CMS, DOS & UNIX	Tuesday, June 20	2-4 p.m.	ISB 110
	Introduction to SPSS	Wednesday, June 21	1-4 p.m.	Chilton 255
	Creating a Home Page: Basic HTML Workshop	Thursday, June 22	2-5 p.m.	Chilton 255
	Creating a Home Page: Basic HTML Workshop	Wednesday, July 26	2-5 p.m.	Chilton 255
	Introduction to Internet Tools & Techniques on UNIX	Friday, June 23	2:30-4 p.m.	Chilton 255
	Introduction to SPSS on Windows	Monday, June 26	2-4 p.m.	Chilton 255
	Introduction to SPSS PC+	Tuesday, June 27	2-4 p.m.	Chilton 255
	Introduction to E-Mail & News on UNIX	Wednesday, June 28	2-4 p.m.	Chilton 255
	Introduction to SAS: Windows, OS/2 & X-Window	Thursday, June 29	2-4 p.m.	Chilton 255
	Introduction to Electronic Mailing Lists	Friday, June 30	2-3 p.m.	ISB 201

✓	Course	Date	Time	Location
	Current Computer Security Issues at UNT	Friday, June 30	3:30-4:30 p.m.	ISB 203
	Introduction to Internet Tools & Techniques on the Mac	Thursday, July 13	2-4 p.m.	ISB 203
	Intermediate UNIX on Jove and Sol	Thursday, July 27	2-4 p.m.	ISB 203

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